STANDARD ST.32

RECOMMENDATION FOR THE MARKUP OF PATENT DOCUMENTS USING SGML
(STANDARD GENERALIZED MARKUP LANGUAGE)

Revision adopted by the PCIPI Executive Coordination Committee
at its seventeenth session on November 24, 1995

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INTRODUCTION

1. This Recommendation is an application of International Standard ISO 8879:1986, *Information Processing - Text and Office Systems - Standard Generalized Markup Language (SGML)*; which is under review.

2. This Recommendation provides for the exchange of patent documents in machine-readable form on any exchange medium in a hardware-, software- and layout-independent format. Such independence of the representation of the contents of a document from their intended uses is achieved by using International Standard ISO 8879:1986, Information processing - Text and office systems - Standard Generalized Markup Language (SGML), to define generic identifiers which are in turn used to mark the logical structure of each patent document.

3. International Standard ISO 8879:1986 cannot be used *per se* as the basis for document processing. That is not the intention of the standard. Instead, ISO 8879 "standardizes the application of generic coding and generalized markup concepts. It provides a coherent and unambiguous *syntax* for describing whatever a user chooses to identify within a document" (ISO 8879:1986 page 2). The choice of tags, that is, the *semantics* to which the syntax applies, is left to the user.

4. Therefore, this Recommendation defines generic identifiers or "tags" for marking the logical elements of a patent document. The logical elements of a patent document are of two types: common text and patent-specific content.

5. Under the terms of International Standard ISO 8879:1986 any tags may be used in a particular document so long as the semantics are defined in an accompanying document type definition (DTD). It is conceivable that a patent issuing authority may choose different tags than those specified in this Recommendation. So long as the tags were defined in the accompanying DTD, the document could be presented to a user on a system designed to read SGML documents. However, documents which use a DTD that differs from that specified below cannot be considered to be in compliance with this Recommendation even if they are in compliance with ISO 8879:1986.

6. Markup in compliance with this Recommendation is independent of layout and formatting. Decisions regarding layout and formatting must be made at the time a document is presented for reading, either on a display screen or on paper. It is at the time of presentation that, for example, text which has been marked as emphasized (bold, italic, etc.) is rendered in an available font which has more or less the desired appearance. It is at the time of presentation that the size of the display page (screen or paper) is determined. Many such decisions which map the generic identifiers in a document to the capabilities of a particular physical display device (whether screen or paper) determine, for example, how many characters will fit on one line or how much text will fit on a display page. As a result, the document may not have exactly the same physical appearance when it is presented on different display devices. This Recommendation does not address issues concerned with mapping generic identifiers to a particular display device. It can be expected that in the future two standards may be applied in this area: Standard Page Description Language (SPDL) ISO/IEC DIS 10180 and Document Style Semantics and Specification Language (DSSSL) ISO/IEC DIS 10179.

7. Markup in compliance with this Recommendation should facilitate importing large sets of documents into a database. In fact, the extensive list of tags for patent bibliographic data will make it possible for database vendors to more easily distinguish various information elements with higher precision than has been possible in the past. This Recommendation does not address issues concerned with mapping generic identifiers to database fields.

8. This revision of ST.32 shall be referenced as version 3 (1995). This is to distinguish it from previous versions, which may still be used for data exchange but, if so, **must** be referenced as: version 1 (October 1987) or version 2 (September 1990). The relevant DTD may then be applied to a specific version for processing, parsing, etc. In addition it is possible to reference the DTD to be used as an attribute to any patent document, the default being the latest version of ST.32. It is, of course, recommended to update files to this latest version of ST.32 for data exchange.

DEFINITIONS

9. The expression **patent document** includes patents for invention, plant patents, design patents, utility certificates, utility models, documents of addition thereto and published applications therefor. (Refer also to WIPO ST.16: *Recommended Standard Code for the Identification of Different Kinds of Patent Documents*)

10. **Common text** refers to logical elements that could occur in any type of industrial property information or in any kind of document, for example, paragraphs, footnotes, subscripts, special characters, lists, embedded images, tables, chemical formulae, mathematical formulae, etc. Tags for common text data are specified and described in Part 1(the DTD is in Annex B).

11. **Patent-specific content** refers to logical elements that ordinarily occur only in patent documents, for example, inventor's name, patent number, issuing authority, priority data, classification symbols, etc. In short, any of the information elements identified in WIPO Standard ST.9, *Recommendation Concerning Bibliographic Data on and Relating to Patents and SPCs*, as well as some others. Tags for patent bibliographic data are specified and described in Part 2 (the DTD is in Annex B).

12. **Markup** is defined as text that is added to the content of a document and that describes the structure and other attributes of the document in a non-system-specific manner, independently of any processing that may be performed on it. Markup includes document type definitions (DTDs), entity references, and descriptive markup (tags).

13. A **document type definition (DTD)** formally defines:

- the names of all the logical elements that are allowed in documents of a particular type;
- how often each logical element may appear;
- the permissible contents for each logical element;
- attributes (parameters) that may be used with each logical element;
- the correct sequence of logical elements;
- the names of all external and pre-defined entities that may be referenced in a document;
- the hierarchical structure of a document;
- the features used from the SGML standard.

A DTD defines the vocabulary of the markup for which SGML defines the syntax. The complete set of tags that may be found in a particular document are listed and formally defined in its DTD which must accompany the document. Each document in a large set of documents which share the same DTD, that is, documents which are of the same type, usually incorporates the DTD by reference.

14. An **entity** is content that is not part of the text stream in a document but which is incorporated into the text stream by reference to its name. In patent documents, for example, images are external entities. Entity references can also be used to code instances of characters not found in the 'declared' character set (see Character Sets below).

15. **Tags** define a document's logical structure by labelling elements of the document's content using the generic identifiers declared in the DTD.

16. The **hierarchy** of SGML tags used in this Recommendation follows the general structure of a patent document. The level in the hierarchy is indicated by the appropriate SGML tag describing a generic logical element. A generic logical element is a component of the text such as the entire document, a specific sub-document, a paragraph, a list, etc. Each generic logical element is described by a start tag and end tag.

level	*sgml tag (example)*
Document	<PATDOC>
. Sub-document	<SDOXX>
. . Text Component (Paragraph)	<P>
. . . Text Element (Subscript)	<SB>
. . . . Character	
. . . End	</SB>
. . End	</P>
. End	</SDOXX>
End	</PATDOC>

17. International Standard ISO 8879:1986 defines an **abstract syntax** and a **reference concrete syntax**. The reference concrete syntax for SGML tags is as follows:

	Start Tag		End Tag	
This is	<B>	text	</B>	that will appear emphasized as bold ...

Where
< is the opening delimiter for Start Tags (1 character)
</ is the opening delimiter for End Tags (2 characters)
> is the closing delimiter for both Start Tags and End Tags (1 character)
B is the generic identifier of this particular tag, defined in the DTD

A generic identifier is a name that identifies a generic logical element. The text between the start tag and the end tag is a specific instance of the generic logical element. Depending upon the generic identifier, parameters may be required. In the description of the various tags in this Recommendation, parameters are referred to as “attributes” in conformance with ISO practice. For an explanation of the relationship between reference concrete syntax and abstract syntax, see International Standard ISO 8879:1986.

18. The following is a brief example of SGML markup:

```
<PATDOC>
<SDOBI LA=EN>
<B100> (Minimum bibliographic tags would need to be added here)
</SDOBI>
<SDODE LA=EN>
<H LVL=0>FABRIC SOFTENER COMPOSITION</H>
<H LVL=1>TECHNICAL FIELD</H>
...
<H LVL=1>SUMMARY OF THE INVENTION</H>
<P N=11>The present invention relates to an aqueous fabric softener composition comprising:
<SL>
<LI>(A) from 1% to 50% by weight of ... cyclic amines of the formula
<EMI FILE=“92102108” ID=“2.1” HE=30 WI=55 TI=CF>
wherein n is 2 or 3, R<SB>1</SB> and
 ...
<LI>(B) from 3% to 20% by weight of (A)
 ...
</SL>
</SDODE>
</PATDOC>
```

In the example above <EMI FILE=“92102108” ID=“2.1” HE=30 WI=55 TI=CF> refers to a chemical structure which has been scanned as an image and which will be imbedded in the text at this point at the time of presentation. <PATDOC> and </PATDOC> mark the beginning and end of a patent respectively. The other tags in the example are explained below and there are more extensive examples in Annex D.

CHARACTER SETS

19. The data content of the majority of documents, including patents, consists of data characters. The data characters could be in any language consisting of many types of character (‘character’ is used in its broadest sense here to include graphical symbols). In this recommendation only one coded character set is referenced: ISO 646. This is probably the most common **system independent** character set in use today. Characters not in this code set should be represented by public entity references - preferably those contained in ISO 8879 - these are referenced in the DTD in Annex B. Note that other character sets and character entity references are possible. It is not recommended to use the code pages contained in WIPO ST.31 since these can lead to problems in data interchange, are not easily maintained and are not as commonly used and accepted as the ISO 646 code page.

REFERENCES

20. The following documents are of fundamental importance to this Recommendation:

International Standard ISO 8879:1986*, Information processing - Text and office systems - Standard Generalized Markup Language (SGML)*;

Technical Report ISO/IEC/TR 9573:1988(E) *Information processing - SGML support facilities - Techniques for using SGML*;

International Standard ISO 639:1988, *Code for the Representation of Names of Languages*.

International Standard ISO 646:1991*, Information Processing - ISO 7-bit coded character set for information interchange*.

WIPO Standard ST.3, *Recommended Standard Two-Letter Code for the Representation of States, Other Entities and Intergovernmental Organizations*;

WIPO Standard ST.9, *Recommendation Concerning Bibliographic Data on and Relating to Patents and SPCs*;

WIPO Standard ST.16, *Recommended Standard Code for the Identification of Different Kinds of Patent Documents*.

21. For additional information concerning SGML the following publications may be of interest (please note there is now a considerable amount of literature, books and periodicals, on SGML, as well as many user groups, the list below is only a small selection):

American National Standards Institute. *Electronic manuscript preparation and markup.* (Z39.59). Transaction Publishers : New Brunswick (USA) and London, 1991. ISBN 0887389457.

Association of American Publishers. Electronic Manuscript Series : *Author's guide to electronic manuscript preparation and markup; Reference manual on electronic manuscript preparation and markup; Markup of mathematical formulas; Markup of tabular material.* Dublin, Ohio : Electronic Publishing Special Interest Group (EPSIG), 1989.

Bryan, Martin. *SGML : an author's guide to the Standard Generalized Markup Language (SGML)*. Wokingham : Addison-Wesley, 1988. ISBN 0201175355.

Goldfarb, Charles F. *The SGML handbook.* Oxford : Oxford University Press, 1990. ISBN 0 19 853737 9.

Van Herwijnen, Eric. *Practical SGML. 2nd.ed.* Dordrecht : Kluwer Academic Publishers, 1994. ISBN 0792394348

REQUIREMENTS OF THE RECOMMENDATION

22. Documents which conform to this Recommendation shall be marked up in conformance with:

- International Standard ISO 8879:1986, Information Processing - Text and Office Systems - Standard Generalized Markup Language (SGML);
- the DTD contained in Annex B.

23. Documents which conform to this Recommendation shall use the *reference concrete syntax* defined in International Standard ISO 8879:1986. See also Annex A: *SGML Declaration for Patent Documents.*

24. The DTD contained in Annex B shall be provided separately from the individual documents in the collection of documents to which it applies.

25. Each document to which the DTD in Annex B applies will incorporate the DTD by reference.

26. Reference to the DTD contained in Annex B shall be made by use of its "public name" which has been [will be] registered with the appropriate international authority and is declared below in Annex B.

27. No document in conformance with this Recommendation shall refer to or incorporate by reference a DTD 1) for which a public name has not been registered with the appropriate international authority; 2) which does not appear in this Recommendation.

28. It may happen that some particularly unusual document contains some text or image portion(s) which cannot be rendered for the end user with adequate fidelity, in the judgement of the issuing authority, without the introduction of one or more logical elements not contained in Annex B. In that event:

28.1. The issuing authority shall provide constructive notice to end users that some documents contain exceptional elements. Where possible, the exact identification of such documents shall be provided, either as a list of document numbers or contiguous ranges of document numbers.

28.2. The issuing authority shall make every attempt to have the required logical element(s) introduced into the appropriate DTD contained in the appropriate section of this Recommendation, so that other issuing authorities may take advantage of them, and so that presentation system vendors may take account of them in preparing presentation software and hardware.

28.3. The issuing authority may, at its discretion, include the required logical element(s) in a supplementary DTD which is incorporated by reference into the DTD(s) that apply to the document(s) in question until such time as the elements are incorporated into this Recommendation.

28.3.1. A supplementary DTD shall not be incorporated directly into the document(s) to which it applies.

28.3.2. A supplementary DTD shall not contain any duplicate logical elements included in the DTD contained in ST.32, Annex B.

28.3.3. If a supplementary DTD is provided, constructive notice shall be given to the end user to that effect.

PART 1: SGML MARKUP FOR COMMON TEXT

The tags described in this part of ST.32 indicate text portions that are not specific to any one type of industrial property information and may therefore be used in any document conforming to ST.32.

GENERAL TEXT

TABLE OF SGML TAGS		
TAG	**NAME**	**DESCRIPTION**
<B>	Bold	Indicates the beginning of text to be highlighted at the time of presentation by using a bold typestyle. An end tag is required.
<BAI>	BAIkaku	Indicates Japanese text portion to be highlighted using an expanded font. An end tag is required.
<BCHG>	Beginning of a CHanGe	Indicates the beginning of a change in bibliographic data only. Attributes required. It is an empty element which should be followed by <ECHG>.
 	line BReak	Indicates the position in the text at which a line break occurs. No end tag is necessary.
<CHF>	CHaracter Fraction	Indicates a character construct consisting of two or more characters in a 'fraction type' construct. Use with the <CHFBR> tag. An end tag is required.
<CHFBR>	CHaracter Fraction BReak	Indicates the break point in a character 'fraction' construct consisting of two or more characters in a 'fraction type' construct. No end tag is necessary.
<CHG>	CHanGe	Indicates the beginning of a change (not in bibliographic data). Attributes required. An end tag is required
<DP>	Document Page	Indicates the beginning of a new page. The attribute N= is required. No end tag is necessary.
<ECHG>	End of a CHanGe	Indicates the end of a change in bibliographic data only. Attributes required. It is an empty element which should be preceded by <BCHG>.
<FLA>	FLoating Accents	This indicates a character enhanced with a particular attributing feature. An end tag is required.
<FLAC>	FLoating ACcents	This indicates the attributing feature in a floating accent construct. No end tag is necessary.
<FOO>	FOOtnote	Indicates a footnote. Attributes required. An end tag is required.
<FOR>	FOotnote Reference	Indicates a reference to a previous footnote. Attributes required. An end tag is required.
<H>	Heading level	Indicates a separate text portion that precedes text parts, for example, paragraphs. An end tag is required.
<HAN>	HANkaku	Indicates Japanese text portion to be highlighted using a compressed font. An end tag is required.
<I>	Italic	Indicates the beginning of text to be highlighted at the time of presentation by using an italic typestyle. An end tag is required.
<LTL>	LiTeraL	Indicates the beginning of text in which the space, indents, line endings, etc., should be preserved as keyed in the original document. An end tag is required.
<O>	'Over' embellishments	Indicates the beginning of text to be covered by an over, or mid, embellishment of a particular designated style (attribute) at the time of presentation. An end tag is required.

TABLE OF SGML TAGS		
TAG	**NAME**	**DESCRIPTION**
<P>	Paragraph	Indicates a text portion known as a paragraph and implies that the text will begin on a new line. No end tag is necessary.
<PATDOC>	PATent DOCument	Indicates the beginning of a patent document instance (file). An end tag is required.
<PC>	Paragraph Continuation	Indicates a continuation of an interrupted paragraph. No end tag is necessary.
<PCL>	Page CoLumn	Indicates the beginning of a new column. The attribute N= is required. No end tag is necessary.
<PLN>	Page LiNe	Indicates the beginning of a new line. The attribute N= is required. No end tag is necessary.
<SB>	SuBscript	Indicates the beginning of text which is to be placed as a subscript to the preceding text outside mathematical formulae. An end tag is required.
<SDOxx>	Sub-DOcument	Indicates the beginning of a sub-document whose identity (xx) is included in the tag. An end tag is recommended.
<SP>	SuPerscript	Indicates the beginning of text which is to be placed as a superscript to the preceding text outside mathematical formulae. An end tag is required.
<TXF>	TeXt Frame	This indicates a rectangular area of text of a page. No end tag is necessary.
<U>	Under embellishment	Indicates the beginning of text to be highlighted with an under embellishment of a particular style (attribute) at the time of presentation. An end tag is required.

TABLE OF ATTRIBUTES		
ATTRIBUTE	**NAME**	**DESCRIPTION**
ALIGN	ALIGN	Alignment of data.
CY	CountrY code	Indicates country code based on ST.3
DATE	DATE	Date : in the format YYYYMMDD
DNUM	Document Number	Identifier of document (publication or application number)
DTD	Document Type Definition	Version number of the DTD.
FILE	File name	The file name of a patent document or image file.
FN	Footnote Number	Unique identification for a footnote
FNREF	Foot Note REFerence	Unique identification for a footnote reference
FONT	FONT	Font used in text frames
FR	FRame	Frame number within a page
HE	HEight	Height of images in mm
ID	IDentifier	Has various parameters depending on tag
KIND	KIND	Kind of document based on ST.16
LA	LAnguage	Indicates sub-document language
LS	Line Spacing	Line spacing in text frames
LVL	LeVeL	Indicates the level of a heading
LX	X coordinate	X coordinate of image in 1/10mm
LY	Y coordinate	Y coordinate of image in 1/10mm
N	Number	Indicates numbers for paragraphs, pages, etc.
POS	POSition	Indicates various parameters depending on the tag
SIZE	SIZE	Font size in text frames
STATUS	STATUS	Indicates status of patent document and/or change
STYLE	STYLE	Indicates the style of various attributes, for example, over characters, etc.
TYPE	TYPE	Type of embellishment
WI	WIdth	Width of images in mm

SGML TAGS: DESCRIPTION AND USAGE

DOCUMENT STRUCTURE

1. **<PATDOC> : PATent DOCument**

This is the mandatory identifier with which every patent document must start. An end tag is required.

Required Attribute(s):
None.

Optional Attribute(s):

`FILE`=name Where 'name' is the name of the patent document file, which contains the document instance.

`STATUS`= Status of the patent document, eg. contains changes, republished, deleted, withdrawn, etc.

Note: It is recommended that the following optional attributes should be used only when the mandatory tags, giving document identification, contained in the <SDOBI> sub-document, are not used. This may be the case, for example, when only partial information is exchanged between offices.

`CY`=xx Where xx is the country or organisation, according to WIPO ST.3, publishing or issuing the patent document. <B190>

`DATE`=YYYYMMDD Date of publication. <B140>

`DNUM`=n Where n is the document number, usually the publication number but may also be the application number. <B110> or <B210>

`KIND`=xx Where xx is the kind of patent document code taken from WIPO ST.16. <B130>

`DTD`=n Where n is the version number of the DTD applied to a particular patent document. The default is ST.32 Version 3 (1995).

DTD Syntax:

```
<!ELEMENT patdoc - -      (sdobi,(sdoab*&sdode?&sdocl*&sdodr?&sdosr?))
                          +(%floats;)
>
<!ATTLIST patdoc cy       CDATA   #IMPLIED    -- Country, organis. St.3      --
                 dnum     CDATA   #IMPLIED    -- Identification   number       --
                 date     NUMBER  #IMPLIED    -- date of publication         --
                 file     CDATA   #IMPLIED    -- file identification         --
                 kind     CDATA   #IMPLIED    -- Kind of patent St.16        --
                 status   CDATA   #IMPLIED    -- Status of the patent doc.   --
                 dtd      NUTOKEN #IMPLIED    -- Version NUMBER of DTD       -->
```

Examples:

```
<PATDOC><SDOBI>Here is a WIPO Patent Document (other tags would normally be included)</SDOBI></PATDOC>
<PATDOC FILE92101123 CY=EP DATE=19921212 DNUM=0500111 KIND=A1>
<SDOBI>Here is a European Patent Office application with a search report (A1)(other tags would normally be
included)</SDOBI></PATDOC>
```

2. <SD0xx> : Sub-DOcument tags

This is the mandatory identifier with which every sub-document must start. An end tag, although optional, is recommended.

Where xx = sub-document identifier

Possible sub-documents are:

<SDOAB>	ABstract
<SDOBI>	BIbliographic data
<SDOCL>	CLaims
<SDODE>	DEscription
<SDODR>	DRawings
<SDOSR>	Search Report

Required Attribute(s):
None.

Optional Attribute(s):

CY=country code	Indicates the country where the sub-document "CLAIMS" especially relate to, abbreviated in accordance with WIPO Standard ST.3 country code.
LA=language code	Indicates language of the sub-document in accordance with International Standard ISO 639:1988.
STATUS=	Status of the patent sub-document, eg. contains changes, republished, deleted, withdrawn, etc.

DTD Syntax:

```
<!ELEMENT sdobi - o (B000?,B100,B200?,B300?,B400?,B500?,B600?,B700?,B800?,
                     B900?) +(bchg|echg)     --  Bibliographic data          -->
<!ELEMENT sdoab - o ((h|p|pc|%img;)+)        -- Abstract                      -->
<!ELEMENT sdodr - o (emi+)                   -- Drawings                      -->
<!ELEMENT sdode - o (h|p|pc|%img;)+          -- Description                   -->
<!ELEMENT sdocl - o (h|p|%lst;)+             -- Claims                        -->
<!ELEMENT sdosr - o ((B510?,B520?,B560?,B580?)|(emi)+) -- Search report       -->
<!ATTLIST (sdobi|sdoab|sdode|sdocl|sdodr|sdosr)
                              la  NAME  #IMPLIED  -- language(ISO 639)       --
                              cy  NAME  #IMPLIED  -- country code            --
                          status CDATA  #IMPLIED  -- Status of the sub-doc.  -->
```

Examples:

```
<SDOBI>
<B500><B542>Here is bibliographic data - it should contain other tags also</B500>
</SDOBI>
<SDOCL LA=F>
<OL>
<LI>Dispositif de reséquencement (RU) pour un noeud d'un système de commutation de cellules, chaque cellule étant constituée d'un nombre variable de sous-cellules ayant une longueur fixe, ce noeud comportant .....
<LI> ...
</OL>
</SDOCL>

<SDOAB LA=D>
<P>Die vorliegende Erfindung betrifft Impfstoffe auf Basis von Bovinen Herpesviren des Typs 1 (BHV-1) die Änderungen in Bereichen ihres Genoms enthalten, die für nicht-essentielle Teile essentieller Proteine kodieren. Mit Hilfe dieser Impfstoffe können geimpfte von nicht-geimpften Rindern unterschieden werden. Die Erfindung betrifft ferner Verfahren zur Isolierung und Herstellung der geänderten BHV-1 Stämme, Isolierung und Herstellung der geänderten Proteine und Peptide.
</SDOAB>
```

```
<SDOCL LA=D CY=AT>
<OL>
<LI>Mikroorganismus DSM 7329 und DSM 7330.
<LI>Verfahren zur Herstellung von L-¡-Aminosäuren durch enzymatische Umsetzung eines D-, L- und/oder
D,L-5-monosubstituierten Hydantoins und/oder einer D-, L- und/oder D,L-N-Carbamoyl-¡-aminosäure,<BR>
</OL>
</SDOCL>
```

3. <CHG> : CHanGe

This indicates data which has been 'changed' (it could also indicate the original text). An end tag is required.

Required Attribute(s):

`DATE=`YYYYMMDD Indicates the date on which the text was changed.

`STATUS=` Indicates the status of the change, the value of this attribute has been left open but one letter codes are recommended, eg. A = amended text, D = deleted text, O = Original text.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT chg   - - (h|p|pc|(%ptext;))*        -- Change text                -->
<!ATTLIST chg date   NUMBER       #REQUIRED    -- Date of change text        --
              status CDATA        #REQUIRED    -- Status of the change       -->
```

Example:

```
<P><CHG DATE=19950321 STATUS=A>This data was amended on 21 March 1995</CHG>
```

4. <BCHG> : Beginning of a CHanGe

This indicates bibliographic data which has been 'changed' (it could also indicate the original text). It is an empty element - it should be followed by `<ECHG>`.

Required Attribute(s):

`DATE=`YYYYMMDD Indicates the date on which the text was changed.

`STATUS=` Indicates the status of the change, the value of this attribute has been left open but one letter codes are recommended, eg. A = amended text, D = deleted text, O = Original text.

Optional Attribute(s):
None

DTD Syntax:

```
<!ATTLIST bchg date  NUMBER       #REQUIRED    -- Date data changed      --
              status CDATA        #REQUIRED    -- Status of the change  -->
```

Example:

```
<B235><BCHG DATE=19960321 STATUS=A><DATE>19960321</DATE><ECHG></B235>
```

5. **<ECHG> : End of CHanGe**

This indicates the end of data which has been 'changed' in bibliographic data (it could also indicate the original text). It is an empty element - it should be preceded by <BCHG>.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT echg   - o EMPTY         -- End of changed bibliographic data -->
```

Example:

```
<B235><BCHG DATE=19960321 STATUS=A><DATE>19960321</DATE><ECHG></B235>
```

6. **<H> : Headings**

This indicates levels of headings which may be treated differently. An end tag is required.

Required Attribute(s):
None.

Optional Attribute(s):

LVL=n	Indicates the level of the heading
ALIGN=	Indicates the alignment of the header which may be centre, left, right - left is the default.

DTD Syntax:

```
<!ELEMENT h   - - (%ptext;)+           -- Header        -->
<!ATTLIST h   lvl NUMBER #IMPLIED      -- Header level  --
                align (%align;) "left"    -- alignment     -->
```

Examples:

<H>This is a default heading</H>

<H LVL=0>This is the title heading</H>

<H LVL=1>This is a sub-section heading</H>

7. **<P> : Paragraphs**

This indicates a text portion commonly known as a paragraph. No end tag is necessary.

Required Attribute(s):
None.

Optional Attribute(s):

N=nnnnnn	Consisting of a 6-digit sequence number indicating every paragraph in a document or sub-document. Leading zeros may be dropped.
ALIGN=	Indicates the alignment of the paragraph which may be centre, left, right - left is the default.

Example:

<P>First text paragraph.<P>Second text paragraph.

<P N=1>First text paragraph.<P N=2>Second text paragraph.

DTD Syntax:

```
<!ELEMENT p     - o (%ptext;)+                -- Paragraph elements  -->
<!ATTLIST p     n   NUMBER #IMPLIED           -- Reference number    --
                align (%align;) "left"        -- alignment          -->
```

8. **<PC> : Paragraph Continuation**

This indicates an interruption in a paragraph, for example, by a figure, table, etc. The existing paragraph should be continued. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT pc    - o (%ptext;)+           -- Paragraph continuation      -->
```

Example:

<P N=12>Here starts a new text paragraph, it contains an EMI:
<EMI ID='2.1' HE=10 WI=20 TI=CF>
<PC>and continues without paragraph formatting ...

9. **
 : BReak**

This indicates a line break in general text. No end tag is necessary. Whether and how the break tag is interpreted at the time of presentation is not specified in this Recommendation. Note that this tag should not be used in mathematical formulae where <BREAK> is used.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT br    - o EMPTY                 -- Line break               -->
```

Example:

This line must break here
and also break here
but that's all for this paragraph.

<P>This line must break here
and also break here
but that's all for this paragraph.

Note: the above example assumes that the break tag is interpreted at the time of presentation as forcing a line break in the text. Other interpretations are possible.

10. **<F00> : FOOtnotes**

This tag identifies a text portion which is the contents of a footnote. The footnote should be inserted in the text stream at the point where it is first referred to. The presentation software will cause the footnote to appear, usually, at the bottom of the page. An end tag is required.

Required Attribute(s):

FN=nnnn.nn Consisting of a 4-digit sequence number indicating the page number of the original document on which the footnote occurred and a 2-digit sequence number indicating the sequence of footnotes on that particular page. Optionally, it may be replaced by a sequential numbering of footnotes within a document, in which case use FN=nnnnnn. Either form is valid. It must be a unique reference in the document. Leading zeros may be dropped.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT foo   - - (%ptext;)+                -- Footnotes                  -->
<!ATTLIST foo  fn  NUTOKEN  #REQUIRED         -- Footnote id.               -->
```

Example:

... text *<FOO FN='10.1'>* This is the text of the footnote - to be placed at the foot of a page - note that the asterisk "*" is also part of this footnote</FOO> ....

Note: The indicator, in this case "*", is NOT inserted by application software, as is normal, because in patent documentation it is often not possible to change data submitted by a patent applicant.

11. **<F0R> : FOotnote Reference**

This indicates from which point(s) in a document a footnote is referenced. An end tag is required.

Required Attribute(s):

FNREF=nnnn.nn Consisting of a 4-digit sequence number indicating the original page number on which the footnote occurred and a 2-digit sequence number indicating the sequence of footnotes on that particular page. This attribute should contain exactly the same value as the attribute of the referenced footnote (FN=). Optionally, it may be replaced by a sequential numbering within a document, in which case use FNREF=nnnnnn. Either form is valid. Leading zeros may be dropped.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT for   - - (%ptext;)+                -- Footnote reference         -->
<!ATTLIST for  fnref  NUTOKEN  #REQUIRED      -- Footref id.                -->
```

Example:

text<FOR FNREF='10.1'>*</FOR> ...

Note: At the time of presentation this should result in the SAME footnote as first appeared on page 10 of the original document being produced on the page where <FOR> is used. This may occur, for example, if there is a page break during processing between the two footnote references which were originally on the same page.

TEXT 'HIGHLIGHTING' MARKUP

Note: The following codes: <B>, <BAI>, <HAN>, <I>, <O>, <U>, <SB> and <SP> may be regarded as tags which can be used to mark characters, words, phrases, etc. as 'highlighted', that is emphasised in some way. In other instances they may be replaced by a 'pure' SGML tag such as `<HPn>`, highlighted phrase, where n is the numeric value assigned to a particular form of highlighting which is determined at the time of presentation (bold, italic, etc.). However, for patent documents, for the purposes of readability, it is recommended that the codes below be used instead. (Highlighted phrase identifiers are not contained in the DTD).

12. **<B> : Bold**

This indicates a text portion to be highlighted as bold. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT b     - - (%ptext;)+ -(b)          -- Bold typeface                --> 
```

Example:

This text is bold `<B>`This text is bold`</B>`

13. **<BAI> : BAIkaku**

This indicates a Japanese text portion to be highlighted using an expanded font. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT bai   - - (%ptext;)+ -(bai|han)     -- Expanded font                --> 
```

14. **<HAN> : HANkaku**

This indicates a Japanese text portion to be highlighted using a compressed font. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT han   - - (%ptext;)+ -(han|bai)     -- Compressed font              --> 
```

15. **<I> : Italic**

This indicates a text portion to be highlighted as italic. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT i     - - (%ptext;)+ -(i)          -- Italics                    -->
```

Example:

This text is italic <I>This text is italic</I>

16. **<0> : 'Over' embellishments**

The over-character tag is used to identify parts of text over which special accents or diacritical marks are to be placed.

Note: the 'mark' could also be placed mid character. In mathematical formulae use <OV>. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

POS=	The position attribute defines the position of the mark and takes one of the values: above or mid. The default value is above.
STYLE=	The style attribute defines the style of the mark. It takes one of the values: single, double, triple, dash, dots, or bold. The default value is single.
TYPE=	The type attribute defines the type of the mark to be used. It takes one of the values: dot, dotdot, dot3, dot4, tie, tiebrace, hat, hacek, acute, grave, cedil, ring, macron, ogonek, dblac, breve, tilde, vec, rvec, dyad, circle, caret, prime, dprime, plus, none, bar. The default value is bar.

Note: Not all combinations of type and style attribute values would normally be used, eg typetilde, style=dots.

DTD Syntax:

```
<!ELEMENT o   - - (%ptext;)+ -(o|ov)     -- 'Over' embellishment               -->
<!ATTLIST o   pos   (above|mid) "above"  -- position of 'over' embellishment   --
              type  (%type;)    "bar"    -- types of embellishment(default bar) --
              style (%style;)   "single" -- Line style    (default single)     -->
```

Examples:

This text has a single continuous bar over the whole sentence.

<O>This text has a single continuous bar over the whole sentence</O>

The word example is covered by a dashed bar

The word <O STYLEDASH>example</O> is covered by a dashed bar.

17. **<U> : Under embellishments**

The under-character tag is used to identify parts of text under which special accents or diactrical marks may be placed - typically an underscore. In mathematical formulae use <OV POS=BELOW>. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

STYLE= The style attribute defines the style of the mark. It takes one of the values: single, double, triple, dash, dots, or bold. The default value is single.

TYPE= The type attribute defines the type of the mark to be used. It takes one of the values: dot, dotdot, dot3, dot4, tie, tiebrace, hat, hacek, acute, grave, cedil, ring, macron, ogonek, dblac, breve, tilde, vec, rvec, dyad, circle, caret, prime, dprime, plus, bar. The default value is bar.

Note: Not all combinations of type and style attribute values would normally be used, eg typetilde, styledots.

DTD Syntax:

```
<!ELEMENT u      - - (%ptext;)+ -(u|ov)   -- Underscore embellishment           -->
<!ATTLIST u      type (%type;) "bar"      -- types of embellishment(default bar) --
                 style(%style;)"single"   --  Line style    (default single)     -->
```

Examples:

This text has a single continuous underscore for the whole sentence.

<U>This text has a single continuous underscore (bar) for the whole sentence.</U>

The word example is underscored with a double bar.

The word <U STYLE=DOUBLE>example</U> is underscored with a double bar.

18. **<SB> : SuBscript**

This indicates a text portion to be placed as a subscript (inferior) to the immediately preceding character. An end tag is required. See also the <SUB> tag used in mathematical formulae.

Required Attribute(s):
None

Optional Attribute(s):

POS= The position attribute takes one of the values: pre, mid or post, post being the default.

DTD Syntax:

```
<!ELEMENT sb     - - ((%hil;)|(#PCDATA))* -(fla) -- Subscript                  -->
<!ATTLIST (sp|sb) pos (PRE|MID|POST) "POST"      -- Position (default post)    -->
```

Example:

H_2O H<SB>2</SB>O

19. **<SP>: SuPerscript**

This indicates a text portion to be placed as a superscript (superior) to the immediately preceding character. An end tag is required. See also the <SUP> tag used in mathematical formulae.

Required Attribute(s):
None

Optional Attribute(s):
POS= The position attribute takes one of the values: pre, mid or post, post being the default.

DTD Syntax:

```
<!ELEMENT sp    - - ((%hil;)|(#PCDATA))* -(fla) -- Superscript                -->
<!ATTLIST (sp|sb) pos (PRE|MID|POST) "POST"     -- Position (default post)    -->
```

Example:

X^{n-1} X<SP>n-1</SP>

MISCELLANEOUS

20. **<CHF> : CHaracter Fraction constructs**

This indicates 'fraction' constructs in general text. The alignment of 'numerator' and 'denominator' is centred by default. It should be used only in general text. An end tag is required.
See also the 'true' fraction tag, <FRAC>, used in mathematical formulae.

Required Attribute(s):
None

Optional Attribute(s):
ALIGN= Indicates the alignment of the numerator and/or denominator, which may be centre, left, right - centre is the default.

Example: (See below)

21. **<CHFBR> : CHaracter Fraction BReak**

This identifies the start of a character fraction 'denominator'. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
STYLE= The style attribute defines the style of the mark preceding the character fraction denominator. It takes one of the values: single, double, triple, dash, dots, or bold. The default value is single.

TYPE= The type attribute defines the type of the mark to be used preceding the character fraction denominator. It takes one of the values: dot, dotdot, dot3, dot4, tie, tiebrace, hat, hacek, acute, grave, cedil, ring, macron, ogonek, dblac, breve, tilde, vec, rvec, dyad, caret, circle, plus, prime, dprime, bar, none. The default value is bar.

Note: Not all combinations of type and style attribute values would normally be used, eg typetilde, styledots.

DTD Syntax:

```
<!ELEMENT chf   - - (((#PCDATA)|(%hil;))+, chfbr) -- character fraction          -->
<!ATTLIST chf align (%align;) "centre"           -- alignment                    --
<!ELEMENT chfbr  - o ((#PCDATA)|(%hil;))+        -- character fraction break    -->
<!ATTLIST chfbr type   (%type;) "bar"       -- types of embellishment(default bar) --
               style  (%style;) "single"      --  Line style   (default single) -->
```

Examples:

$\frac{2x}{3xy}$ <CHF>2x<CHFBR>3xy</CHF>

20 <CHF>20<CHFBR TYPE=NONE>D</CHF>
D

22. **<FLA> : FLoating Accents**

This indicates a character, or characters, enhanced with a particular attributing feature(s). It enables "composite" characters not in a character set to be composed from characters and character entity references. It should be used in combination with the <FLAC> tag. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT fla  - - (((#PCDATA)|(%hil;))+, flac)    -- Floating accent construct -->
```

23. **<FLAC> : FLoating ACcent**

This indicates the start of a floating accent to be placed above, mid, or below a base character, or characters, above is the default. It enables "composite" characters not in a character set to be composed from characters and character entity references. It should be used in combination with the <FLA> tag. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
POS= The position attribute takes one of the values: above, mid or below, above being the default.

DTD Syntax:

```
<!ELEMENT flac - o ((#PCDATA)|(%hil;))+       -- Floating accent (upper part) -->
<!ATTLIST flac pos (ABOVE|MID|BELOW) "ABOVE"  -- Position (default above)     -->
```

Examples:

Å <FLA>A<FLAC>ˆ</FLA>

a <FLA>a<FLAC>•</FLA>

24. **<LTL> : LiTeraL text**

Indicates the beginning of text in which the space, indents, line endings, etc., should be preserved as keyed in the original layout. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
`WI=`nnn Width: 3-digit expression in millimetres.

DTD Syntax:

```
<!ELEMENT ltl   - - CDATA                  -- Literal text       -->
<!ATTLIST ltl   wi  NUMBER  #IMPLIED       -- Width in mm        -->
```

Example:

```
This text
    has a special
        layout
            which must be
        preserved
    exactly
as entered.
```

```
<LTL>
   This text
       has a special
           layout
               which must be
           preserved
       exactly
   as entered.
</LTL>
```

PAGE STRUCTURE TAGS

The following tags are specific to patent document processing and are to be used to indicate page structure in order to allow exact citation of pages, page numbers, columns and lines. For post processing of the data these tags can, of course, be ignored if required.

25. **<TXF> : TeXt Frame**

This indicates an area of text within a page of a document. An end tag is not allowed - it is an EMPTY element.

Required Attribute(s):

`FR=`nnnn Consisting of a 4-digit sequence number within a page.

`HE=`nnn Height: 3-digit expression in millimetres.

`WI=`nnn Width: 3-digit expression in millimetres.

Optional Attribute(s):

`LX=`nnnn 4-digit X-coordinate expressed in 1/10 millimetres referencing to the top left corner of the page.

`LY=`nnnn 4-digit Y-coordinate expressed in 1/10 millimetres referencing to the top left corner of the page.

`FONT=`name The font used in the text frame, eg Courier, Helvetica, etc.

`SIZE=`nn A 2 digit number for the point size of the font.

`LS=`n Where n is the number (may be decimal) of the line spacing within the text frame.

DTD Syntax:

```
<!ELEMENT txf   - o EMPTY                       -- Text frame                --> 
<!ATTLIST txf fr NUTOKEN  #REQUIRED             -- Txf identity              --> 
              he  NUMBER  #REQUIRED             -- Height in mm              --> 
              wi  NUMBER  #REQUIRED             -- Width in mm               --> 
              lx  NUMBER  #IMPLIED              -- X-coord  1/10 mm          --> 
              ly  NUMBER  #IMPLIED              -- Y-coord  1/10 mm          --> 
            font  CDATA   #IMPLIED              -- Font name                 --> 
            size  NUMBER  #IMPLIED              -- Font point size           --> 
              ls  NUTOKEN #IMPLIED              -- Line spacing              -->
```

Example:

```
<PATDOC CY=JP>
<SDOAB>
<TXF FR=0001 HE=080 WI=080 LX=0200 LY=1800>
<P>Japanese Patent Office abstract...
</SDOAB></PATDOC>
```

26. **<DP> : Document Page**

This indicates the beginning of a page. No end tag is necessary.

Note: The use of this tag is optional since it is a formatting tag. It may be discarded at the time of presentation. However, it may be useful for patent documents where page citation is common and may need to be preserved in electronic document systems.

Required Attribute(s):

`N=`nnnn 4-digit number being the page number per document.

Optional Attribute(s):

None

DTD Syntax:

```
<!ELEMENT dp    - o EMPTY                    -- Document page break    -->
<!ATTLIST dp    n  NMTOKEN  #REQUIRED        -- Document page number   -->
```

Example:

<DP N=6>This is the start of page 6

27. **<PCL> : Page CoLumn**

This indicates the beginning of a column in a page. It should always be preceded by <TXF> tag. No end tag is necessary.

Note: The use of this tag is optional since it is a formatting tag. It may be discarded at the time of presentation. However, it may be useful for patent documents, where column citation is used, and may need to be preserved in electronic document systems.

Required Attribute(s):
N=nnnn 4-digit number being the column number.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT pcl    - o EMPTY                    -- Page column          -->
<!ATTLIST pcl   n  NMTOKEN  #REQUIRED         -- Page column number   -->
```

Example:

<PCL N=2>This is the start of column 2

28. **<PLN> : Page LiNe**

This indicates the beginning of a line within a page. It should always be preceded by a <TXF> tag. No end tag is necessary.

Note: The use of this tag is optional since it is a formatting tag. It may be discarded at the time of presentation. However, it may be useful for patent documents, where line number citation is common, and may need to be preserved in electronic document systems.

Required Attribute(s):
N=nnnn 4-digit number being the line number.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT pln    - o EMPTY                    -- page line          -->
<!ATTLIST pln    n  NMTOKEN  #REQUIRED        -- page line number   -->
```

Example:

<PLN N=15>This is the start of line 15

LISTS

TABLE OF SGML TAGS AND ATTRIBUTES		
TAG	**NAME**	**DESCRIPTION**
<DD>	Definition Description	Indicates a text portion which is the description of a tagged item in a definition list. No end tag is necessary.
<DL>	Definition List	Indicates a text portion to be displayed as a list, each item comprising a term followed by a description. An end tag is required.
<DT>	Definition Term	Indicates a text portion which is the term in a definition list. No end tag is necessary.
<LI>	List Item	Indicates the beginning of an item which forms part of a simple, ordered or unordered list. No end tag is necessary.
<OL>	Ordered List	Indicates a text portion to be displayed as a list, each item being identified by a sequential number or letter. An end tag is required.
<SL>	Simple List	Indicates a text portion to be displayed as a simple list. An end tag is required.
<UL>	Unordered List	Indicates a text portion to be displayed as a list, each item identified by a symbol which is defined in a required attribute (ST). An end tag is required.
ATTRIBUTE	**NAME**	**DESCRIPTION**
COMPACT	COMPACT	Indicates if lists should be processed as compact
LEVEL	LEVEL	Nesting level of a list
NUMSTYLE	NUMSTYLE	Numeric style of a list
PREFIX	PREFIX	Prefix for each list item
ST	STyle	Style (character or graphic) of an unordered list item
TSIZE	Term SIZE	Indicates the horizontal space allowed for definition terms plus gutter space

SGML TAGS: DESCRIPTION AND USAGE

29. **<DL> : Definition List**

This indicates a text portion known as a definition or glossary list. A definition list contains one or more items, each followed by its description. The items are identified by the <DT> identifier and the description by the <DD> identifier. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

TSIZE= This attribute is used to specify the indent to be used for the definition description. It is normally larger than the maximum width of the terms.

COMPACT= Used to indicate when no blank lines are to be left between definition items at the time of presentation.

DTD Syntax:

```
<!ELEMENT dl    - - (dt,dd)+                    -- Definition list             -->
<!ATTLIST dl    tsize       NUMBER #IMPLIED     -- Term size attribute         --
                compact (compact) #IMPLIED      -- Spacing between items       -->
```

Example: (see below)

30. **<DT> : Definition Term**

This indicates a term in a definition list. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT dt    - o (%ptext;)                   -- Definition term             -->
```

Example: (see below)

31. **<DD> : Definition Description**

This indicates the description of an item (term) marked <DT> in a definition list. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT dd    - o ((%ptext;)|p)+              -- Definition description      -->
```

Example: In this example it is assumed that none of the terms exceed the length that may have been specified as default for such lists.

EPO European Patent Office
JPO Japanese Patent Office
USPTO United States Patent and Trademark Office

```
<DL>
<DT>EPO
<DD>European Patent Office
<DT>JPO
<DD>Japanese Patent Office
<DT>USPTO
<DD>United States Patent and Trademark Office
</DL>
```

32. <OL> : Ordered List

This indicates a portion of structured text known as a list. An ordered list will have a sequence of numbers or letters generated at the time the document is created, not at the time of presentation, to indicate the relative position in the list of each item. Lists may be nested. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

COMPACT= Used to indicate when no blank lines are to be left between items at the time of presentation.

LEVEL= Used to indicate the nesting level of a list.

NUMSTYLE= Used to indicate the numeric style of a list.

PREFIX= Used to indicate prefix for each list item.

DTD Syntax:

```
<!ELEMENT ol    - - (li)+                       -- Ordered list               -->
<!ATTLIST ol    compact (compact) #IMPLIED      -- Spacing between items      --
                level    NUMBER   #IMPLIED      -- Nesting level of list      --
                numstyle CDATA    #IMPLIED      -- Numbering style            --
                prefix   CDATA    #IMPLIED      -- Prefix for each list item  -->
```

Example: (see below)

33. <SL> : Simple List

This indicates a portion of structured text known as a list. A simple list will not have anything preceding the list items to indicate them as such. Lists may be nested. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

COMPACT= Used to indicate when no blank lines are to be left between items at the time of presentation.

LEVEL= Used to indicate the nesting level of a list.

DTD Syntax:

```
<!ELEMENT sl    - - (li)+                       -- Simple list                -->
<!ATTLIST sl  compact (compact) #IMPLIED        -- Spacing between items      --
              level    NUMBER   #IMPLIED        -- Nesting level of list      -->
```

Example: (see below)

34. **<UL> : Unordered List**

This indicates a portion of structured text known as a list. An unordered list will have symbols generated at the time of presentation to indicate each item. Lists may be nested. An end tag is required.

Required Attribute(s):

`ST=` This attribute is followed by an identifier for the character or the graphic symbol required to indicate each separate item in the list.

Optional Attribute(s):

`COMPACT=` Used to indicate when no blank lines are to be left between items at the time of presentation.

`LEVEL=` Used to indicate the nesting level of a list.

DTD Syntax:

```
<!ELEMENT ul    - -  (li)+                      -- Unordered list              -->
<!ATTLIST ul  st       NMTOKEN  #REQUIRED       -- Ulist symbol                --
              level    NUMBER   #IMPLIED        -- Nesting level of list       --
              compact (compact) #IMPLIED        -- Spacing between items       -->
```

Example: (see below)

35. **<LI> : List Item**

This indicates an item of a list, `<OL>`, `<SL>` and `<UL>`. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT li    - o ((%ptext;)|p)+          -- List item                    -->
```

Examples:

Text

First item in a simple list.

Second item.

more text.

Text<SL><LI>First item in a simple list. <LI>Second item.</SL>more text.

Text
1. First item in a compact ordered list.
2. Second item.
more text.

Text<OL COMPACT=COMPACT><LI>First item in a compact ordered list.<LI>Second item.
</OL>more text.

Text

- First item in an unordered list with ‘bullets’.
- Second item.

more text.

Text
<UL ST="•">
<LI>First item in an unordered list with ‘bullets’.
<LI>Second item.
</UL>
more text

Note: here we have a character entity reference “•” since a ‘bullet’ is not a character in the base code page ISO 646. It is contained in the public entity references cited in the DTD at Annex B.

IMAGES

TABLE OF SGML TAGS AND ATTRIBUTES		
TAG	**NAME**	**DESCRIPTION**
<ELE>	Embedded image LEgend	Indicates a portion of text directly related to an embedded image. Attributes required. An end tag is required.
<EMI>	EMbedded Image	Indicates non character-coded data. Attributes required. No end tag is required since this is a reference to an external image file and the tag is empty.
<EMR>	EMbedded image Reference	Indicates a reference to a previous EMI. Attributes required. No end tag is necessary since it is self-contained and the tag is empty.
<RTI>	Replacement of Text by Image	Indicates text that is also captured as an image. The image data may be used in place of the text in order to guarantee that presentation is identical to the original document. Attributes required. An end tag is necessary.
<GAI>	GAIji	Indicates a reference to a Gaiji (Japanese) dot font file which is composed of five dot font files. Attributes required. An end tag is required.
ATTRIBUTE	**NAME**	**DESCRIPTION**
FILE	FILE	External file name of the image
HE	HEight	Height of images in mm
ID	InDentifier	Has various parameters depending on tag
IMF	IMage Format	Indicates the image format of a stored image.
LX	X coordinate	X coordinate of image in 1/10mm
LY	Y coordinate	Y coordinate of image in 1/10mm
TI	Type of Image	Type of image stored
WI	WIdth	Width of images in mm

SGML TAGS: DESCRIPTION AND USAGE

36. <EMI> : EMbedded Image

This indicates any information which is not character coded, for example, drawings, chemical structures, graphs, etc. It is non-SGML data. No end tag is necessary since no text is allowed, it is empty. The information will normally be stored in a standard graphics file format. WIPO Standard ST.33 (compression according to CCITT Group 4) is the recommended default.

For external references, that is, to the image itself, we have a unique identifier to the external name of the image via the use of a file name which, for patent documents, is usually the publication number, or application number, of the patent document (acting as the unique filename) in combination with the internal identification specified below.

Required Attribute(s):

`ID`=nnnn.nnnn — Internal identifier consisting of a 4-digit sequence number indicating the original page number on which the image occurred and a 4-digit sequence number indicating the sequence of images on that particular page. (This follows the frame and sequence number indexing methodology used in WIPO Standard ST.33). Optionally, it may be replaced by a sequential numbering of images within a document, in which case use ID=nnnnnnnn. Either form is valid.

`HE`=nnn — Height: 3-digit expression in millimetres.

`WI`=nnn — Width: 3-digit expression in millimetres.

Optional Attribute(s):

`FILE=name` — Where 'name' is the name (with pointer if required) of the image file, which contains the embedded image.

`LX`=nnnn — 4-digit X-coordinate expressed in 1/10 millimetres of embedded image location referencing to the top left corner of the page.

`LY`=nnnn — 4-digit Y-coordinate expressed in 1/10 millimetres of embedded image location referencing to the top left corner of the page.

Note : The above two attributes should be used only when physical pages are represented. In all cases leading zeros may be dropped.

`IMF=` — Indicates, generally, the type of IMage Format, or File, of the stored image. Possible formats and files include:

`ST33`	WIPO ST.33 (default)
`CGM`	Computer Graphics Metafile
`EPS`	Encapsulated Postscript
`G3`	CCITT Group 3 compression
`G4`	CCITT Group 4 compression
`TIFF`	Tag Image File Format
`IGES`	Initial Graphics Exchange Format
`JPEG`	Joint Photographic Experts Group Format
`MPEG`	Motion Picture Experts Group Format
`GEM`	Digital Research GEM
`AI`	Adobe Illustrator
`GIF`	Compuserve Graphics Image Format
`PCT`	Apple Picture File Format
`BMP`	Microsoft Bitmap File Format
`PCX`	Paintbrush File Format
`WMF`	Windows Metafile Format
`PGL`	Hewlett-Packard Graphics Language
`WPG`	WordPerfect Graphics File format

etc.

The default format used is office-dependent and must be stated in the DTD. Also note that they are not mutually exclusive, for example, ST.33 and TIFF files may comprise CCITT Group 4 compression.

TI=	Type of embedded Image. Possible type names include:	
	AD	Abstract Drawing
	CF	Chemical Formulae
	CI	Clipped Image
	CP	Computer Programs
	DN	DNa sequences
	DR	DRawings
	FF	undefined characters
	FG	FiGures
	GR	GRaphs
	MF	Mathematical Formulae
	PA	Full PAge facsimile image
	PH	PHotographs
	SR	Search Report forms
	TB	TaBular data
	TX	TeXt character(s)
	UI	Undefined Images

DTD Syntax:

```
<!ELEMENT emi   - o  EMPTY                        -- Embedded image              -->
<!ATTLIST emi id   NUTOKEN   #REQUIRED            -- Image identity              --
              he   NUMBER    #REQUIRED            -- Height in mm                --
              wi   NUMBER    #REQUIRED            -- Width in mm                 --
              file CDATA     #IMPLIED             -- image file name             --
              lx   NUMBER    #IMPLIED             -- X-coord 1/10 mm             --
              ly   NUMBER    #IMPLIED             -- Y-coord 1/10 mm             --
              imf (%imgfmt;) #IMPLIED             -- Format stored emi           --
              ti (AD|CF|CI|CP|DN|DR|FF|FG|GR|MF|PA|PH|SR|TB|TX|UI) #IMPLIED
                                                  -- Image type                  -->
```

Examples:

```
<EMI ID='2.1' HE=10 WI=20 TI=CF>
```

Identifies the first embedded image on page 2 of the current document which is a chemical representation with actual sizes of 10mm vertical and 20mm horizontal.

```
<EMI FILE="d:\image\fig22.wpg" ID="12.6" HE=30 WI=100 IMF=WPG TI=MF>
```

Note: The identity attribute has been standardised for embedded images, footnotes and their associated references. The use of page and frame number generates a unique code within a document that will:

- identify the related entities;
- form a means of reference to the original document when inspecting the digitised data; and
- bind the entities together at the time of presentation, without regard to the fact that the final page location may differ from that of the original document.

37. **<ELE> : Embedded image LEgend**

This indicates a portion of text directly related to an embedded image. An end tag is required.

Required Attribute(s):

ID=nnnn.nnnn	Consisting of a 4-digit sequence number indicating the page number on which the image occurred and a 4-digit sequence number indicating the sequence of images on that particular page. This attribute contains exactly the same values as the congruent attribute of the related embedded image. Optionally, it may be replaced by a sequential numbering of images within a document, in which case use ID=nnnnnnnn. Either form is valid. Leading zeros may be dropped.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT ele   - - (%ptext;)+                -- Figure caption             -->
<!ATTLIST ele  id  NUTOKEN  #REQUIRED
>
```

Examples:

...<ELE ID="2.1">This is the legend of the first embedded image on page 2</ELE>...

38. <EMR> : EMbedded image Reference

This indicates a reference to an embedded image. The tag is self-contained. This tag should be used for refering to images which occur more than once in a document, since the full <EMI> tag need not be repeated and the image need not be scanned more than once.

Required Attribute(s):

ID=nnnn.nnnn Consisting of a 4-digit sequence number indicating the original page number on which the image occurred and a 4-digit sequence number indicating the sequence of images on that particular page. This attribute contains exactly the same values as the congruent attribute of the referenced embedded image. Optionally, it may be replaced by a sequential numbering of images within a document, in which case use ID=nnnnnnnn. Either form is valid. Leading zeros may be dropped.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT emr   - o EMPTY                     -- Reference to emi           -->
<!ATTLIST emr  id  NUTOKEN  #REQUIRED
>
```

Examples:

...<EMR ID="2.1">This is a reference to the first embedded image on page 2...

Note: For further explanation see <EMI> above.

39. <RTI> : Replacement of Text by Image

Indicates text that is also captured as an image. The image data may be used in place of the text in order to guarantee that presentation is identical to the original document. An end tag is required. The image should be stored in a standard format, for example WIPO Standard ST.33.

Required Attribute(s):

ID=nnnn.nnnn Consisting of a 4-digit sequence number indicating the page number on which the image occurred and a 4-digit sequence number indicating the sequence of images on that particular page. Optionally, it may be replaced by a sequential numbering of images within a document, in which case use ID=nnnnnnnn. Either form is valid. In both cases leading zeros may be deleted.

HE=nnn Height: 3-digit expression in millimetres.

WI=nnn Width: 3-digit expression in millimetres.

Optional Attribute(s):

`FILE=name` Where 'name' is the name (with pointer if required) of the image file, which contains the RTI image.

`IMF=` Indicates, generally, the type of IMage Format, or File, of the stored image.
See <EMI> for full list.
`ST33` WIPO ST.33 (default)

The default format used is office-dependent and must be stated in the DTD. Also note that they are not mutually exclusive, for example, a TIFF file may comprise CCITT Group 4 compression.

`LX=`nnnn 4-digit X-coordinate expressed in 1/10 millimetres of embedded image location referencing to the top left corner of the page.

`LY=`nnnn 4-digit Y-coordinate expressed in 1/10 millimetres of embedded image location referencing to the top left corner of the page.

Note: The above two attributes are used only when physical pages are represented.

DTD Syntax:

```
<!ELEMENT rti - - CDATA                    -- Replace text with image     -->
<!ATTLIST rti id  NUTOKEN   #REQUIRED      -- rti identity                --
              he  NUMBER    #REQUIRED      -- Height in mm                --
              wi  NUMBER    #REQUIRED      -- Width in mm                 --
              file CDATA    #IMPLIED       -- image file name             --
              lx  NUMBER    #IMPLIED       -- X-coord  1/10 mm            --
              ly  NUMBER    #IMPLIED       -- Y-coord  1/10 mm            --
              imf (%imgfmt;)#IMPLIED       -- image format                -->
```

Example:

```
<SDOBI><B100>Minimum B100 tags required here<B100>
<RTI ID=00000001 HE=150 WI=170 LX=0200 LY=0300>
```
Japanese Patent Office title page (bibliographic information)...
```
</RTI>
</SDOBI>
```

40. **<GAI> : GAIji**

This indicates a reference to a Gaiji dot font file which is composed of five dot font files each of different sizes. It may be of particular use within the Japanese Patent Office. An end tag is required.

Required Attribute(s):

`ID=`nnnn Consisting of a 4-digit number indicating the sequence number of the dot font character in the Gaiji file.

Optional Attribute(s):
None.

DTD Syntax:

```
<!ELEMENT gai   - -  CDATA                    -- Gaiji character            -->
<!ATTLIST gai  id  NUTOKEN  #REQUIRED
>
```

Example:

`<GAI ID=0001>` Japanese Gaiji dot font character `</GAI>`

TABLES

TABLE OF SGML TAGS AND ATTRIBUTES		
TAG	**NAME**	**DESCRIPTION**
<CEL>	table CELl	Indicates start of a new cell. No end tag is necessary.
<ROW>	table ROW	Indicates start of a new row. No end tag is necessary.
<TAB>	TABle	Indicates the beginning of the tabular data. Attribute required. An end tag is required.
<TCH>	Table Column Header	For one particular column or multiple columns. No end tag is necessary.
<TSB>	Table StuB lines	For single or multiple rows. No end tag is necessary.
<TSH>	Table SubHeading	For one or more columns, same as for header. No end tag is necessary.
<TTI>	Table TItle	May appear above or below the actual table. No end tag is necessary.
ATTRIBUTE	**NAME**	**DESCRIPTION**
AL	ALign	Used to justify the tabular data
CB	Column Begin	Indicates start and end columns
CE	Column End	For straddle headers or cells
CO	COlumn	Number of columns in the table
CS	Column Separator	Column separation attributes
ID	IDentifier	Any identifier applied to the original table
OR	ORientation	Used to signal table orientation
RB	Row Begin	Indicates start and end rows
RE	Row End	For straddle stub lines or cells
ROTATION	ROTATION	Rotation of data within a cell
RS	Row Separator	Row separation attributes

SGML TAGS: DESCRIPTION AND USAGE

41. **<TAB> : TABular material**

This indicates the beginning of tabular data. An end tag is required.

Required Attribute(s):

CO=nn 2-digit number giving the total number of columns in a table.

Optional Attribute(s):

ID= Any identifier applied to the original table, for example, 'TABLE 1.'

OR= Orientation.
- L Landscape
- P Portrait (default)

RS= Row Separator(s)

CS= Column Separator(s)

RS and CS consist of a row or column identifier and separator style.

Row and Column identifiers are:
- P Preceding first column or row
- F Following last column or row
- A All columns or rows not explicitly identified
- n Explicit number of row or column to follow

Separator style.
Possible styles are:
- BL blank space between (default)
- S single
- D double
- T triple
- B bold
- DA dashed
- DT dotted

DTD Syntax:

```
<!ELEMENT tab  - - (row,(%rowcnt;))p)+                  -- Main structure    -->
<!ATTLIST tab  co NUMBER #REQUIRED                      -- Number of columns --
               or  (L|P) "P"                            -- Orientation       --
               id  CDATA  #IMPLIED                      -- Identifier        --
               cs  CDATA  #IMPLIED                      -- Col separators    --
               rs  CDATA  #IMPLIED                      -- Row separators    --
```

Examples:

```
<TAB CO=5 ID='Table 1'>
<ROW><CEL>DATA 1<CEL>DATA 2<CEL>DATA 3<CEL>DATA 4<CEL>DATA 5
</TAB>
```

tabular material consisting of five columns of information identified as Table 1:

Table 1

DATA 1	DATA 2	DATA 3	DATA 4	DATA 5

```
<TAB CO=6 RS='P B F B A S' CS='P B F B A S'>
<ROW><CEL>DATA 1<CEL>DATA 2<CEL>DATA 3<CEL>DATA 4<CEL>DATA 5<CEL>DATA 6
</TAB>
```

Tabular material consisting of six columns of information surrounded by a bold box and the rows and columns separated by single lines:

DATA 1	DATA 2	DATA 3	DATA 4	DATA 5	DATA 6

See also below.

42. **<TTI> : Table TItle**

This indicates the title of the tabular data. A title would usually appear above the table but it may also appear below where it would be termed a caption, but the same tag will suffice. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):

AL=	L	Left
	R	Right
	C	Centered (default)

DTD Syntax:

```
<!ELEMENT tti   - o (%ptext;)*              -- Table title              -->
<!ATTLIST  tti  al  (L|R|C)  "C"            -- Text alignment           -->
```

Example:

<TTI>Title of the Table.

43. **<TCH> : Table Column Header**

This indicates the header of one column or multiple columns in the table. No end tag is necessary.

Required Attribute(s):
None.

Optional Attribute(s):

AL=	L	Left
	R	Right
	C	Centered (default)

CB=nn 2-digit number giving start column in the case of a straddled header.

CE=nn 2-digit number giving end column in the case of a straddled header.

DTD Syntax:

```
<!ELEMENT tch   - o (%ptext;)*              -- Column header            -->
<!ATTLIST tch  cb  NUMBER #IMPLIED          -- Start column             --
               ce  NUMBER #IMPLIED          -- End column               --
               al  (L | R | C) "C"          -- Text alignment           -->
```

Examples:

<TCH>Header for single column

<TCH CB=1 CE=2>Header which straddles both columns one and two.

44. **<TSH> : Table Sub-Header**

This indicates the subheader of one column or multiple columns in the table. No end tag is necessary.

Required Attribute(s):
None.

Optional Attribute(s):

AL=	L	Left
	R	Right
	C	Centered (default)

CB=nn 2-digit number giving start column in the case of a straddled header.

CE=nn 2-digit number giving end column in the case of a straddled header.

DTD Syntax:

```
<!ELEMENT tsh   - o (%ptext;)*                -- Column subhead              -->
<!ATTLIST tsh  cb  NUMBER #IMPLIED            -- Start column                --
               ce  NUMBER #IMPLIED            -- End column                  --
               al  (L | R | C)  "C"           -- Text alignment              -->
```

Examples:

<TSH>Subheader for single column

<TSH CB=1 CE=2>Subheader which straddles both columns one and two.

45. **<TSB> : Table StuB line**

This indicates the stub line (text descriptor) for one or more rows in the table. No end tag is necessary.

Required Attribute(s):
None.

Optional Attribute(s):

AL=	L	Left (default)
	R	Right
	C	Centered
	D	Decimal
	E	Exponent

RB=nn 2-digit number giving start row in the case of a straddled stub line.

RE=nn 2-digit number giving end row in the case of a straddled stub line.

Note: Stub lines may straddle rows. If the leftmost column contains row-straddling stub lines, then all stub lines must specify the RB= (row begin) attribute. Straddling stub lines must also specify the RE= (row end) attribute.

DTD Syntax:

```
<!ELEMENT tsb   - o (%ptext;)*                -- Stub field                  -->
<!ATTLIST tsb  rb  NUMBER #IMPLIED            -- Start row                   --
               re  NUMBER #IMPLIED            -- End row                     --
               al  (L | R | C | D | E)  "L"    -- Text alignment              -->
```

Examples:

<TSB RB=1>Stub line for a single row where a subsequent stub line straddles more than one row.

<TSB RB=7 RE=8>Stub line which straddles rows seven and eight.

46. **<ROW> : ROW**

This indicates the start of a new row in the table. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

Note: Simple rows contain only cells. Each cell may contain more than one line of type. Other rows may contain stub lines as the left-most cell. Stub lines may straddle more than one row.

DTD Syntax:

```
<!ELEMENT row   - o EMPTY                    -- Table row                  -->
```

Examples:

<ROW>row five of table
<ROW>row six of table.

47. **<CEL> : CELl**

This indicates the start of a new data cell in the table. No end tag is necessary.

Required Attribute(s):
None.

Optional Attribute(s):

AL=	R	Right (default)
	L	Left
	C	Centered
	D	Decimal
	E	Exponent

RB=nn 2-digit number giving start row in the case of straddled cells.

RE=nn 2-digit number giving end row in the case of straddled cells.

CB=nn 2-digit number giving start column in the case of straddled cells.

CE=nn 2-digit number giving end column in the case of straddled cells.

ROTATION= Specifies the rotation of the contents of a cell.

Note: Cells may straddle columns and/or rows. If a row contains column straddling cells, then all cells must specify the column begin attribute. Likewise, if a row contains row straddling cells, all cells must specify the row begin attribute. Straddling cells must also specify the row end and/or column end attributes. Some rows may contain stub lines as the leftmost cell. Stub lines may also straddle rows but never columns.

DTD Syntax:

```
<!ELEMENT cel   - o ((%ptext;)*              -- Table cell                 -->
<!ATTLIST  cel  rb  NUMBER #IMPLIED          -- Start row                  --
                re  NUMBER #IMPLIED          -- End row                    --
                cb  NUMBER #IMPLIED          -- Start column               --
                ce  NUMBER #IMPLIED          -- End column                 --
                al (L | R | C | D | E) "R"    -- Text alignment             --
                rotation NUMBER #IMPLIED     -- Rotation of cell contents  -->
```

Examples:

Simple Table Rows

<ROW><CEL>Data<CEL>Data<CEL>Data

Complex Table Rows

<ROW><CEL CB=1>Data<CEL CB=2 CE=3>Data<CEL CB=4>Data

Table I - Original

COOLING SYSTEM COMPONENTS			
DESCRIPTION	RETAIL PRICE		QUANTITY
	ex VAT	inc VAT	in stock
Radiators	295.50	330.00	3,012
Hose Clips	5.25	6.25	27,435
Lower Pipes	23.66	26.50	12,445
Upper Pipes	21.35	23.00	13,752
Caps	15.50	17.00	4,049
Pumps	341.00	375.00	3,553

Table I - Structure

```
+----------------------------------------------------+
!                                                    !
!   <TAB CO=4>                                       !
!      +---------------------------------------+     !
!      !     <TTI>                             !     !
!      +---------------------------------------+     !
!                                                    !
!  +--------+   +---------------------+    +--------+ !
!  ! <TCH>  !   !        <TCH>        !    ! <TCH>  ! !
!  +--------+   +---------------------+    +--------+ !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSH>  !   ! <TSH>  !    ! <TSH>  !   ! <TSH>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!                                                    !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSB>  !   ! <CEL>  !    ! <CEL>  !   ! <CEL>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSB>  !   ! <CEL>  !    ! <CEL>  !   ! <CEL>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSB>  !   ! <CEL>  !    ! <CEL>  !   ! <CEL>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSB>  !   ! <CEL>  !    ! <CEL>  !   ! <CEL>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSB>  !   ! <CEL>  !    ! <CEL>  !   ! <CEL>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!  +--------+   +--------+    +--------+   +--------+ !
!  ! <TSB>  !   ! <CEL>  !    ! <CEL>  !   ! <CEL>  ! !
!  +--------+   +--------+    +--------+   +--------+ !
!                                                    !
!  </TAB>                                            !
!                                                    !
+----------------------------------------------------+
```

Table I - Markup

```
<TAB CO=4 RS=0'PS FS AS' CS='PS FS AS'>
<ROW><TTI>COOLING SYSTEM COMPONENTS
<ROW><TCH AL=L>DESCRIPTION
<TCH CB=2 CE=3>RETAIL PRICE
<TCH AL=R>QUANTITY
<ROW><TSH>
<TSH AL=R>ex Vat
<TSH AL=R>inc Vat
<TSH AL=R>in stock
<ROW><TSB>Radiators<CEL AL=D>295.50<CEL AL=D>330.00<CEL>3,012
<ROW><TSB>Hose Clips<CEL AL=D>5.25<CEL AL=D>6.25<CEL>27,435
<ROW><TSB>Lower Pipes<CEL AL=D>23.66<CEL AL=D>26.50<CEL>12,445
<ROW><TSB>Upper Pipes<CEL AL=D>21.35<CEL AL=D>23.00<CEL>13,752
<ROW><TSB>Caps<CEL AL=D>15.50<CEL AL=D>17.00<CEL>4,049
<ROW><TSB>Pumps<CEL AL=D>341.00<CEL AL=D>375.00<CEL>3,553
</TAB>
```

Table II - Original

TABLE 1
THE CURING OF COATING COMPOSITIONS UNDER ULTRAVIOLET LIGHT

COMPOSITION	TIME (MIN.)	D-IMPACT* THICKNESS (MIL)	R-IMPACT** ADMISSION	HARDNESS	(IN-LB)***	(IN-LB2)***
1	75	O.1-0.2	90 percent	8H	25	10
	180	O.3-0.5	100 percent	2H	50	10
	180	0.5	100 percent	HB	100	0
2	130	O.1-0.2	100 percent	8H	25	0
	150	O.1-0.2	100 percent	8H	25	0
3	60	0.2	100 percent	8H	50	0
	120	0.2	100 percent	8H	50	0
4	60	0.2	100 percent	8H	30	10
	90	1.0	60 percent	8H	40	10
5	120	O.4-0.5	95 percent	8H	30	10
6	120	0.2	100 percent	8H	25	0
7	60	0.4	100 percent	8H	160	50
	120	0.4	100 percent	8H	160	50
8	60	O.4-0.5	100 percent	8H	75	10
9	60	O.2-0.4	100 percent	8H	40	0
10	60	O.2-0.4	100 percent	8H	40	0
11	30	0.5	100 percent	8H	100	100
12	30	O.05-0.07	100 percent	6H	40	10

* Direct impact
** Reverse impact
*** Inch-Pounds

Table II - Structure

```
1          2          3          4          5          6          7        Column
+-------------------------------------------------------------------------+ ! Row
!                                                                           !
!   <TAB CO=7 ID='TABLE 1'>                                                 !
!                                                                           !
!        +-----------------------------------------------------------+   !
!        !      <TTI>                                                !   !  1
!        +-----------------------------------------------------------+   !
!                                                                           !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TCH> ! !  <TCH>  ! !  <TCH> ! !  <TCH> ! !  <TCH>  ! !  <TCH> ! !  <TCH> ! !  2
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  3
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !        ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  <CEL> ! !  <CEL> ! !  4
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !        ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  5
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  6
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !        ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  7
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  8
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !        ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  9
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 10
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !        ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 11
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 12
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 13
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 14
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !        ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 15
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 16
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 17
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! ! 18
! ---------- ---------- ---------- ---------- ---------- ---------- ---------- !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! ! 19
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
! !  <TSB> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! !  <CEL> ! !  <CEL>  ! !  <CEL> ! ! 20
! +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ +--------+ !
!                                                                           !
!   </TAB>                                                                  !
+-------------------------------------------------------------------------+
```

Table II - Mark-up

```
<TAB CO=7 ID='TABLE 1' RS='PS FS AS' CS='PS FS AS'>
<ROW><TTI>THE CURING OF COATING COMPOSITIONS UNDER ULTRAVIOLET LIGHT
<ROW><TCH><U>COMPOSITION</U>
<TCH><U>TIME(MIN.)</U>
<TCH>D-IMPACT<FOR FNREF="18.1">*</FOR><U>THICKNESS (MIL)</U>
<TCH>R-IMPACT<FOR FNREF="18.2">**</FOR><U>ADHESION</U>
<TCH><U>HARDNESS</U>
<TCH><U>(IN-LB)<FOR FNREF="18.3">***</FOR></U>
<TCH><U>(IN-LB2)<FOR FNREF="18.3">***</FOR></U>
<ROW><TSB RB=3 RE=5>1<CEL>75<CEL AL=C>0.1-0.2<CEL>90 percent<CEL>8H<CEL>25<CEL>10
<ROW><CEL>180<CEL AL=C>0.3-0.5<CEL>100 percent<CEL>2H<CEL>50<CEL>10
<ROW><CEL>180<CEL>0.5<CEL>100 percent<CEL>HB<CEL>100<CEL>0
<ROW><TSB RB=6 RE=7>2<CEL>130<CEL AL=C>0.1-0.2<CEL>100 percent<CEL>8H<CEL>25<CEL>0
<ROW><CEL>150<CEL AL=C>0.1-0.2<CEL>100 percent<CEL>8H<CEL>25<CEL>0
<ROW><TSB RB=8 RE=9>3<CEL>60<CEL AL=C>0.2<CEL>100 percent<CEL>8H<CEL>50<CEL>0
<ROW><CEL>120<CEL AL=C>0.2<CEL>100 percent<CEL>8H<CEL>50<CEL>0
<ROW><TSB RB=10 RE=11>4<CEL>60<CEL AL=C>0.2<CEL>100 percent<CEL>8H<CEL>30<CEL>10
<ROW><CEL>90<CEL AL=C>1.0<CEL>60 percent<CEL>8H<CEL>40<CEL>10
<ROW><TSB RB=12>5<CEL>120<CEL AL=C>0.4-0.5<CEL>95 percent<CEL>8H<CEL>30<CEL>10
<ROW><TSB RB=13>6<CEL>120<CEL AL=C>0.2<CEL>100 percent<CEL>8H<CEL>25<CEL>0
<ROW><TSB RB=14 RE=15>7<CEL>60<CEL>0.4<CEL>100 percent<CEL>8H<CEL>160<CEL>50
<ROW><CEL>120<CEL AL=C>0.4<CEL>100 percent<CEL>8H<CEL>160<CEL>50
<ROW><TSB RB=16>8<CEL>60<CEL AL=C>0.4-0.5<CEL>100 percent<CEL>8H<CEL>75<CEL>10
<ROW><TSB RB=17>9<CEL>60<CEL AL=C>0.2-0.4<CEL>100 percent<CEL>8H<CEL>40<CEL>0
<ROW><TSB RB=18>10<CEL>60<CEL AL=C>0.2-0.4<CEL>100 percent<CEL>8H<CEL>40<CEL>0
<ROW><TSB RB=19>11<CEL>30<CEL AL=C>0.5<CEL>100 percent<CEL>8H<CEL>100<CEL>100
<ROW><TSB RB=20>12<CEL>30<CEL AL=C>0.05-0.07<CEL>100 percent<CEL>6H<CEL>40<CEL>10
<FOO FN="18.1">* Direct Impact</FOO>
<FOO FN="18.2">** Reverse Impact</FOO>
<FOO FN="18.3">*** Inch-Pounds</FOO>
</TAB>
```

Note: The footnote text has been captured within the table tag. This will indicate to a formatter that this footnote is associated with the table and should be presented immediately following the table rather than at the foot of the page.

CHEMICAL FORMULAE

TABLE OF TAGS AND ATTRIBUTES		
TAG	**NAME**	**DESCRIPTION**
<CHE>	CHEmical formula	Indicates the beginning of a quasilinear formula. An end tag is required.
<CHR>	CHemical Reaction	Indicates the beginning of a chemical reaction formula. An end tag is required.
<CRF>	Chemical ReFerence	Indicates the beginning of a reference to a chemical formula. Attribute required. No end tag is necessary, it is self-contained.
ATTRIBUTE	**NAME**	**DESCRIPTION**
ID	IDentifier attribute	A unique name.
NUM	NUMber	Used to specify an explicit formula number.
REFID	REFerence number IDentification	An id reference value giving a unique name.

SGML TAGS: DESCRIPTION AND USAGE

Note: Tagging is confined to relatively simple formulae. No attempt has been made to develop coding for so-called "ring-structures" or Markush structures.

48. <CHE> : CHEmical formula

This indicates the beginning of a quasi-linear chemical formula. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
ID= A unique name, which must start with a letter, eg. idxyz

NUM= Used to specify an explicit formula number.

DTD Syntax:

```
<!ELEMENT  che - -  (%ptext;)*                      -- Chemical formula      -->
<!ATTLIST  che  id  ID   #IMPLIED -- chem reaction id --
                num CDATA   #IMPLIED                -- specific number       -->
```

Example:
$2FeCl_2.FeCl_3.xH_2O$ <CHE>2FeCl<SB>2</SB>.FeCl<SB>3</SB>.xH<SB>2</SB>O</CHE>

49. <CHR> : CHemical Reaction

This indicates the beginning of a chemical reaction formula. An end tag is required.
When descriptive text must appear above and/or below an arrow the <CHF> construct is used.

Required Attribute(s):
None

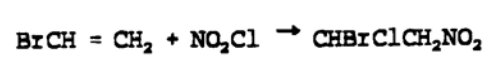
Optional Attribute(s):
ID= A unique name, which must start with a letter, eg. idxyz

NUM= Used to specify an explicit formula number.

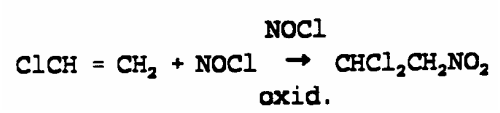
DTD Syntax:

```
<!ELEMENT  chr - -  (%ptext;)*                    -- Chemical reaction    -->
<!ATTLIST  chr id  ID     #IMPLIED                -- chem reaction id     --
               num CDATA  #IMPLIED                -- specific number      -->
```

Examples:



```
<CHR>BrCH=CH<SB>2</SB>+NO<SB>2</SB>
Cl&rarr;CHBrClCH<SB>2</SB>NO<SB>2</SB> </CHR>
```



```
<CHR>ClCH=CH<SB>2</SB>+NOCl<CHF>NOCl <CHFBR
TYPE=VEC>
oxid.</CHF>CHCl<SB>2</SB>CH<SB>2</SB>NO
<SB>2</SB></CHR>
```

50. **<CRF> : Chemical ReFerence**

This indicates from which point(s) a chemical representation is referenced. The tag is self-contained and therefore there is no end tag. Although a reference might be a text string requiring no markup, markup is recommended for purposes of searching.

Required Attribute(s):
`REFID=` A unique name, which must start with a letter, eg. refid=xyz

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT crf - o    EMPTY                    -- Reference to che. formula   -->
<!ATTLIST crf refid  IDREF  #REQUIRED         -- Unique reference            -->
```

MATHEMATICAL FORMULAE

TABLE OF SGML TAGS AND ATTRIBUTES		
TAG	**NAME**	**DESCRIPTION**
<ABOVE>	ABOVE	Indicates a formula value to be displayed above another formula value. No end tag is necessary.
<BOX>	BOXes	Indicates parts of a formula to be placed in a box. An end tag is required.
<BREAK>	BREAK	This indicates a line break in the formula. The tag is self contained, ie. it has no content.
<COL>	COLumn(s)	This indicates a column in a matrix. An end tag is required.
<DF>	Display Formula	This indicates the beginning of displayed mathematical formula(e). An end tag is required.
<DFG>	Display Formula Group	This indicates a group of display mathematical formula(e) that are to be processed together. An end tag is required.
<DFREF>	Display Formula REFerence	Indicates a reference to a formula. Attribute required. No end tag is necessary.
<F>	inline Formula	Indicates an inline formula. An end tag is required.
<FENCE>	FENCEs	Indicates a fence or bracket. An end tag is required.
<FRAC>	FRACtions	This indicates fractions. An end tag is required.
<FROM>	FROM	Identifies the lower limit for the <INTEGRAL>, <PLEX>, <PRODUCT> and <SUM> tags. No end tag is required.
<INTEGRAL>	INTEGRAL	This indicates information to be displayed as an integral, using the general limits form of presentation. An end tag is required.
<ITALIC>	ITALIC	This indicates parts of a formula to be set in italic. An end tag is required.
<MARK>	MARK	This indicates a mark for vertical alignment within a formula. Attribute required. It is self-contained and therefore no end tag is necessary.
<MARKREF>	MARK REFerence	This indicates a reference to a defined mark and causing the system to vertically align the formula on that mark. Attribute required. No end tag is necessary.
<MATRIX>	MATRIX	This indicates a matrix formula. An end tag is required.
<MIDDLE>	MIDDLE (post)	This indicates a single separator mark called a post in a formula. An end tag is necessary.
<OF>	OF	Identifies the operand for the <INTEGRAL>, <PLEX>, <PRODUCT> and <SUM> tags. No end tag is required.
<OPERATOR>	OPERATOR	Identifies an operator in a <PLEX> construction. Its use is optional.
<OV>	OVer	This indicates parts of a formula over which special characters or diacriticals are to be placed. An end tag is required.
<OVER>	OVER	This indicates a fraction denominator. No end tag is necessary.
<PILE>	PILE	This indicates segments of a formula that are to be placed one above the other. An end tag is required.
<PLEX>	PLEX	Identifies a general limits operator. Must be followed immediately by the operator. An end tag is required.
<POWER>	POWER	This indicates an exponential formula. An end tag is required.
<PRODUCT>	PRODUCT	This indicates a formula that presents the product of formula values using the general limits form of presentation. An end tag is required.
<ROMAN>	ROMAN	This indicates parts of a formula to be set in roman. An end tag is required.
<ROOT>	ROOT	This indicates data to be displayed as a root. An end tag is required.
<SQRT>	SQuare RooT	This indicates a square root. An end tag is required.

TABLE OF SGML TAGS AND ATTRIBUTES		
<SQUARE>	SQUARE	This indicates data to be displayed as a square. An end tag is required.
<SUB>	SUBscript	This indicates a mathematical inferior placed as a subscript. An end tag is required.
<SUM>	SUMmation	This indicates a formula to be displayed as a summation, using the general limits form of presentation. An end tag is required.
<SUP>	SUPerscript	This indicates a mathematical superior placed as a superscript. An end tag is required.
<TENSOR>	TENSORs	This indicates a tensor. Attribute required. An end tag is required.

TABLE OF SGML TAGS AND ATTRIBUTES		
<TO>	TO	Identifies the upper limit for the <INTEGRAL>, <PLEX>, <PRODUCT> and <SUM> tags. No end tag is required.
<VEC>	VECtor	This indicates a vector. An end tag is required.
ATTRIBUTE	**NAME**	**DESCRIPTION**
ALIGN	ALIGNment	Used to specify alignment of data.
CLOSE	CLOSE	Use to specify a character in fence constructs.
ID	IDentifier attribute.	Used to specify various formula identity attributes.
NUM	NUMber	Used to specify an explicit formula number.
OPEN	OPEN	Used to specify a character in fence constructs.
PAGE	PAGE	Used to specify page number may be system generated for references.
POS	POSition	Position of inferiors and superiors.
POSF	POSition of the First suffix	Used to specify the position of the first suffix attribute of tensors.
REFID	REFerence IDentification	Used to identify various formula references.
SPC	SPaCing	Spacing of elements
STYLE	STYLE	Used to define the style of a character, for example, double fence.
SUFFIX	SUFFIX	Used to identify suffixes of tensors.
TYPE	TYPE	Used to define the type of character used, for example, brace fence.

SGML TAGS: DESCRIPTION AND USAGE

These tags are taken from: ISO *Technical Report ISO/IEC/TR 9573:1988(E) - Information processing - SGML support facilities - Techniques for using SGML*. In particular, section 8 - Mathematics. The layout and some examples are different. Due acknowledgement is given to the ISO document.

FORMULA AND FORMULA REFERENCE

51. **<F> : inline Formula**

This indicates an inline mathematical formula. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT f  - - (%formel;)+  -(br|matrix|pile|frac|mark|markref) -- In-line formula -->
```

Example:

... the basic assumption is that 2 x 2 = 4 and therefore ...

... the basic assumption is that <F>2 x 2 = 4</F> and therefore ...

Note: In simple cases such as this the use of SGML tags is not mandatory since the formula can be keyed, printed, etc., as part of the text stream. Nevertheless, markup is recommended for purposes of searching.

In addition it is recommended that <F> be used sparingly since if multi-level formulae are tagged as such later processing (display, printing) may be difficult or create awkward line spacing in the application. For these reasons the DTD has been modified to allow only certain constructs within the <F> tag.

52. <DF> : Display Formula

This indicates the beginning of displayed (set off from the text) mathematical formula(e). An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

ALIGN= The alignment attribute takes one of the values left, right, centre. Left is the default value.

ID= A unique name, which must start with a letter, eg. id=xyz.

NUM= Used to specify an explicit formula number. If omitted, sequential numbering of the formulae would normally be performed by the text formatter.

DTD Syntax:

```
<!ELEMENT df    - -  (%formel;)+  -(br)          -- Display formula           -->
<!ATTLIST df  align  (%align;) "centre"          -- Alignment                 -->
              id     ID       #IMPLIED           -- Display formula id        -->
              num    CDATA    #IMPLIED           -- Display formula number    -->
```

Example:

$n^2 = G.d/D^2 = G_2.t/(D.p^2)$ (1)

```
<DF NUM=(1)>n<SUP>2</SUP> = G.d/D<SUP>
2</SUP> = G<SUB>2</SUB>.t/(D.p<SUP>2
</SUP>)</DF>
```

53. <DFG> : Display Formula Group

This indicates a group of displayed (set off from the text) mathematical formula(e) that are to be processed together. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

ALIGN= The alignment attribute takes one of the values left, right, centre. Left is the default value.

ID= A unique name, which must start with a letter, eg. idxyz.

NUM= Used to specify an explicit formula number for the group.

DTD Syntax:

```
<!ELEMENT dfg - - (df+)                          -- Display formula group      -->
<!ATTLIST dfg align  (%align;) "centre"          -- Alignment                  -->
              id      ID       #IMPLIED          -- Display formula group id   -->
              num     CDATA    #IMPLIED          -- Display formula group num  -->
```

Examples:

`NUM=` Used to specify an explicit formula number for the group.

DTD Syntax:

```
<!ELEMENT dfg - - (df+)                          -- Display formula group      -->
<!ATTLIST dfg align  (%align;) "centre"          -- Alignment                  -->
              id      ID       #IMPLIED          -- Display formula group id   -->
              num     CDATA    #IMPLIED          -- Display formula group num  -->
```

Examples:

$$n^2 = G.d/D^2 = G_2.t/(D.p^2)$$

$$x^2 = H.d/D^2 = G_2.t/(E.p^2)$$

$$y^2 = J.d/D^2 = G_2.t/(F.p^2)$$

```
<DFG NUM=(1)><DF>n<SUP>2</SUP> = G.d/D<SUP>2
</SUP> = G<SUB>2</SUB>.t/(D.p<SUP>2</SUP>)</DF>
<DF>x<SUP>2</SUP> = H.d/D<SUP>2</SUP> = G
<SUB>2</SUB>.t/(E.p<SUP>2</SUP>)</DF><DF>y
<SUP>2</SUP> = J.d/D<SUP>2</SUP> = G<SUB>2
</SUB>.t/(F.p<SUP>2</SUP>)</DF></DFG>
```

$$n^2 = G.d/D^2 = G_2.t/(D.p^2) \quad (1a)$$

$$x^2 = H.d/D^2 = G_2.t/(E.p^2) \quad (1b)$$

$$y^2 = J.d/D^2 = G_2.t/(F.p^2) \quad (1c)$$

```
<DFG><DF NUM=(1a)>n<SUP>2</SUP> = G.d/D
<SUP>2</SUP> = G<SUB>2</SUB>.t/(D.p<SUP>2
</SUP>)</DF><DF NUM=(1b)>x<SUP>2</SUP> =
H.d/D<SUP>2</SUP> = G<SUB>2</SUB>.t/(E.p<SUP>2
</SUP>)</DF><DF NUM=(1c)>y<SUP>2</SUP> =
J.d/D<SUP>2</SUP> = G<SUB>2</SUB>.t/(F.p<SUP>2
</SUP>)</DF></DFG>
```

54. **<DFREF> : mathematical Formula REFerence**

This indicates a formula reference, or formula group reference, within text phrases. It refers to an identified formula (see `<DF>` and `<DFG>` above). The tag is self-contained and therefore there is no end tag.

Required Attribute(s):

`REFID=` A unique name, which must start with a letter, eg. id=xyz.

Optional Attribute(s):

`PAGE=` The page number attribute can take the values yes and no, in the first case, which is the default, the appropriate page number, supplied by the system, is added to the reference.

DTD Syntax:

```
<!ELEMENT dfref  - o EMPTY                       -- Formula reference          -->
<!ATTLIST dfref  refid  IDREF  #REQUIRED         -- Formula id                 -->
                 page (yes|no) "yes"             -- Page number                -->
```

Example:

$$n^2 = G.d/D^2 = G_2.t/(D.p^2) \quad [12]$$

.....

An example is shown on page 15 ....

```
<DF ID="Math12" NUM=[12]>n<SUP>2</SUP> = G.d/
D<SUP>2</SUP> = G<SUB>2</SUB>.t/ (D.p
<SUP>2</SUP>)</DF>
An example is shown on <DFREF REFID="Math12"> ...
```

Note: on processing the page number of the reference may be generated.

FORMULA CONTENT

55. **<MARK> : MARK**

This indicates a position for vertical alignment within a formula. In many cases, for example when aligning multiple formulae on equal signs, marking and referring to a horizontal position is required. The mark tag is used to define a mark. It is self-contained and therefore no end tag is necessary.

Required Attribute(s):
ID= The required identifier attribute is used when referring to a mark and must be unique.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT mark - o   EMPTY                      -- Mark for alignment          -->
<!ATTLIST mark id ID #REQUIRED                  -- Reference id for the mark   -->
```

Examples:

See <MARKREF> below

56. **<MARKREF> : MARK REFerence**

This indicates a reference to a defined mark and causes the system to vertically align the formula horizontally on that mark. The appropriate value for the reference identifier attribute (refid=) must be provided. The tag is self-contained, ie. it has no content, therefore, no end tag is necessary.

Required Attribute(s):
REFID= The identifier for the mark to which reference is made.

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT markref  - o  EMPTY                   -- Reference to a mark         -->
<!ATTLIST markref refid IDREF #REQUIRED         -- Id of the mark referred to  -->
```

Example:

z = x + 6y - 3 + 12x -3y
= x + 3y - 3 + 12x
= 13x + 3y - 3

```
<DF> z <MARK ID=x> = x + 6y - 3 + 12x - 3y</DF>
<DF>  <MARKREF REFID=x> 8y - 12</DF>
<DF>  <MARKREF REFID=x> y - 3</DF>
```

57. **<BREAK> : BREAK**

This indicates that a line break occurred at this point in a formula. The type attribute (type=) with values optional or required indicates if the break point is to be considered an optional breakpoint, and thus similar to hyphenating words, or a mandatory break. The latter is the default. Since the tag has no content an end tag is not required.

Required Attribute(s):
None

Optional Attribute(s):
TYPE= The type of break - required or optional. Required is the default.

DTD Syntax:

```
<!ELEMENT   break - o EMPTY                              -- break point in formul    --
<!ATTRIBUTE break type (required|optional) "required"   -- type of break            -->
```

58. **<B0X> : BOXes**

This indicates parts of a formula to be placed in a box. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
STYLE= Style attribute - see <OV> below, default is a single line.

DTD Syntax:

```
<!ELEMENT box   - - (%formel;)+                  -- Box around a formula     -->
<!ATTLIST box style (%style;) "single"           -- Box line styles          -->
```

Example:

a + b

<BOX>a + b</BOX>

59. **<0V> : 'OVer' embellishments**

This identifies parts of a formula where special accents or diacritical marks may be placed: over, mid or below data. In general text use <O> or <U>. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

POS= The position attribute defines the position of the mark and takes one of the values: above, below or mid. The default value is above.

STYLE= The style attribute defines the style of the mark. It takes one of the values: single, double, triple, dash, dots, or bold. The default value is single.

TYPE= The type attribute defines the type of the mark to be used. It takes one of the values: dot, dotdot, dot3, dot4, tie, tiebrace, hat, hacek, acute, grave, cedil, ring, macron, ogonek, dblac, breve, tilde, vec, rvec, dyad, circle, caret, prime, dprime, plus, bar, none. The default value is bar.

Note: Not all combinations of type and style attribute values would normally be used, eg type=tilde, style=dots.

DTD Syntax:

```
<!ELEMENT ov - -  (%formel;)+               -- 'over' embellishments          -->
<!ATTLIST ov pos  (above|below|mid) "above"  -- position                       --
             type (%type;)          "bar"    -- type of embellishment          --
          style(%style;)         "single" -- style                      -->
```

Example:

$\overline{x + y}$

<OV>x + y</OV>

60. **<TENSOR> :TENSORs**

This indicates a tensor in a formula. An end tag is required.

Required Attribute(s):
SUFFIX= The suffix attribute takes the suffixes of the tensor; a space indicating a switch from superscript to subscript or subscript to superscript.

Optional Attribute(s):
POSF= The value of the position of the first suffix attribute takes the value sup or sub, sup being the default.

DTD Syntax:

```
<!ELEMENT tensor - - (%formel;)+                -- tensors                    -->
<!ATTLIST tensor posf (sub|sup) "sup"           -- position of the suffix     --
                 suffix CDATA #REQUIRED         -- value of the first suffix  -->
```

Example:

$A^{i}_{j}{}^{k} = g^{ip} g^{kq} A_{pjq}$

```
<TENSOR SUFFIX"i j k">A</TENSOR> = </TENSOR SUFFIX="IP">g
</TENSOR><TENSOR SUFFIX ="kq">g </TENSOR><TENSOR POSF=SUB
SUFFIX= "pjq" >A</TENSOR>
```

61. **<ITALIC> : ITALIC**
<ROMAN> : ROMAN

These indicate parts of a formula to be set in italic or roman, contrary to common practice and not being a function name. End tags are required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT italic  - - (%formel;)+ -(italic)       -- Italic          -->
<!ELEMENT roman   - - (%formel;)+ -(roman)        -- Roman           -->
```

Example:

x + y = a^2 <F>x + y = <ITALIC>a²</ITALIC></F>

62. **<FRAC> : FRACtions**

This indicates fractions. The alignment of numerator and denominator is centered by default.
Note that the ISO numerator tag <numer> can be omitted since the element is required.
An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
ALIGN= Indicates the alignment of the numerator and/or denominator, which may be centre, left, right - centre is the default.

DTD Syntax:

```
<!ELEMENT frac   - - ((%formel;)+, over)          -- Fraction numerator          -->
<!ATTLIST frac align (%align;) "centre"           -- Fraction alignment          -->
```

Example: (See below)

63. **<0VER> : OVER (fraction denominator)**

This identifies a fraction denominator. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT over  - o ((%formel;)+)                 -- Fraction denominator        -->
```

Examples:

$\frac{2x}{3xy}$ <DF><FRAC>2x<OVER>3xy</FRAC></DF>

$\frac{2x + 3y^2}{12x - 12y}$ <DF><FRAC>2x + 3y²<OVER>12x - 12y</FRAC></DF>

$\frac{1}{1 + \frac{1}{y^2}}$ <DF><FRAC>1<OVER>1+<FRAC>1<OVER>y²</FRAC> </FRAC> </DF>

$\frac{1}{1 + \frac{1}{y^2}}$ <DF><FRAC ALIGN=L>1<OVER>1+<FRAC>1<OVER>y² </FRAC> </FRAC></DF>

64. **<SUP> : SUPerscript**

This indicates a mathematical superior placed as a superscript. Several levels are allowed. An end tag is required.

Note: In cases where the optional attribute, POS=, is NOT used, the position of superscript, whether following or preceding the base character, can be determined by where the <SUP> is placed in the text (see examples below).

Required Attribute(s):
None

Optional Attribute(s):
POS= The position attribute takes one of the values pre, mid, or post. The default is post.

DTD Syntax:

```
<!ELEMENT sup    - - (%formel;)+                  -- Superscript                 -->
<!ATTLIST (sup|sub) pos (PRE|MID|POST) "POST"     -- Position (default post)     -->
```

Examples:

e^x e^x

^{x-y}N ^{x-y}N or N^{x-y}

See further examples below.

65. **<SUB> : SUBscript**

This indicates a mathematical inferior placed as a subscript. Several levels are allowed. An end tag is required. See notes at <SUP> above.

Required Attribute(s):
None

Optional Attribute(s):
POS= The position attribute takes one of the values pre, mid, or post. The default is post.

DTD Syntax:

```
<!ELEMENT sub    - - (%formel;)+              -- Subscript                  -->
<!ATTLIST (sup|sub) pos (PRE|MID|POST) "POST"   -- Position (default post)    -->
```

Examples:

T_2^1 T¹₂

E^{x^2} E^{x²}

2^{n_1} 2^{n₁}

$E^{a_2^1}$ E^{a¹₂}

Using the hairspace character entity reference it is possible to indicate a staggered arrangement:

$T_1{}^2{}_3$ <DF>T₁ ² ₃</DF>

66. **<PILE> : PILEs**

This indicates segments of a formula that are to be placed one above the other. The <PILE> tag is immediately followed by an implied "above1" element, specification of which is not required, (ISO: "where both the start and end tags can and should be omitted). This is followed by one or more above elements, where the start tag is required. Alignment is to centre by default. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
ALIGN= Indicates the alignment of values which are centered by default.

SPC= Indicates the spacing between elements, close or normal. Normal is the default.

67. **<ABOVE> : ABOVE**

This indicates a formula value to be displayed above another formula value. An <ABOVE> tag can be used as many times as necessary to achieve the required stacking of formula values. An above can occur within columns, in a matrix (see below), and piles. No end tag is necessary.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT pile   - -  ((%formel;)+,above+)          -- Top element, above+      -->
<!ATTLIST pile  spc   (NORM | CLOSE) "NORM"         -- Spacing                  -->
                align (%align;) "centre"            -- Alignment                -->
<!ELEMENT above  - o  ((%formel;)+)                 -- Lower layers             -->
```

Example:

```
<PILE>a<ABOVE>b<ABOVE>c</PILE>
```

68. **<FENCE> : FENCEs**

This indicates fences (brackets), which may be of variable size. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):

TYPE= Type of fence, for opening and closing constructs, which may be one of the following:

(	paren	(Default)
[	bracket	
{	brace	
|	bar	
<	angbrack	
/	solidus	
	none	

STYLE= Style of the fence. It takes one of the values: single, double, triple, dash, dots or bold. The default value is single.

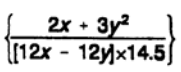
CLOSE=character Specifies a character that is to be displayed as a closing fence on the right end of the data. Any value for the type attribute is ignored.

OPEN=character Specifies a character that is to be displayed as an opening fence on the left end of the data. Any value for the type attribute is ignored.

DTD Syntax:

```
<!ELEMENT fence   - - (%formel;)+               -- Brackets. parentheses etc.  -->
<!ATTLIST fence type (%fencty;) "paren"         -- Fence kind code             --
                style(%style;) "single"         -- Line styles                 --
                open   CDATA #IMPLIED           -- Special open  char          --
                close  CDATA #IMPLIED           -- Special close char          -->
```

Examples:



```
<FENCE TYPE=BRACE><FRAC>2x + 3y<SUP>2</SUP><OVER><FENCE
TYPE=BRACKET>12x - 12y</FENCE> x 14.5</FRAC></FENCE>
```

```
<FENCE TYPE=BAR STYLE=DOUBLE><FRAC>A +1<OVER>B</FRAC></FENCE>
```

```
<FENCE OPEN="("CLOSE="]"><FRAC>a<OVER>b</FRAC>,1</FENCE>
```

69. **<MIDDLE> : MIDDLE (post)**

This indicates a single separator mark called a "post" in a formula. The <MIDDLE> tag is used with the fence tag to separate values within a fence. An end tag is necessary.

Required Attribute(s):

None

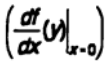
Optional Attribute(s):

STYLE= Style of the post. See above for style attributes. The default is a single post.

DTD Syntax:

```
<!ELEMENT middle - - (#PCDATA)                -- Middle of a space          -->
<!ATTLIST middle style (%style;) "single"     -- Line styles                -->
```

Example:



```
<FENCE><FRAC>df<OVER>dx</FRAC>(y)<MIDDLE>|</MIDDLE>
<SUB>x=0</SUB></FENCE>
```

PLEXES

70. **<PLEX> : PLEX and <OPERATOR>: OPERATOR**

This indicates a formula to be presented in the style of a general limit operator. A plex must contain an operator as the first element. Specification of the operator tag <OPERATOR> is optional. The operator can be followed by from-operators (<FROM> tags) and to-operators (<TO> tags), as well as an of-operand (<OF> tag). See examples below. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT plex     - - (operator,(from?&to?)?,of?)  -- Generalized operator     -->
<!ELEMENT operator o o (#PCDATA)                    -- Operator symbol          -->
```

See below for examples.

Note: The sum, integral, and product elements are special cases of the general plex, the operator being implied by these tags, for which see below.

71. **<SUM> : SUMmation**

This indicates a formula to be displayed as a summation, using the limit form of presentation. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT sum   - - ((from?&to?)?,of?)          -- Summation                    -->
```

72. **<INTEGRAL> : INTEGRAL**

This indicates information to be displayed as an integral, using the limit form of presentation. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT integral - - ((from?&to?)?,of?)       -- Integral                     -->
```

73. **<PRODUCT> : PRODUCT**

This indicates a formula that presents the product of formula values using the limit form of presentation. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT product - -  ((from?&to?)?,of?)       -- Product                      -->
```

74. **<FROM> : Operator for “limits”**

This identifies the lower limit for the <INTEGRAL>, <PLEX>, <PRODUCT> and <SUM> tags. No end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT from  - o (%formel;)+                 -- Start index for operator    -->
```

75. **<0F> : Operator for "limits"**

This identifies the operand for the <INTEGRAL>, <PLEX>, <PRODUCT> and <SUM> tags. No end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT of    - o (%formel;)+              -- Formula operated upon       -->
```

76. **<T0> : Operator for "limits"**

Identifies the upper limit for the <INTEGRAL>, <PLEX>, <PRODUCT> and <SUM> tags. No end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT to    - o (%formel;)+              -- End index for operator      -->
```

Examples:

$\bigcup_{i=1}^{10} a_i$ <PLEX>U<FROM>i=1<TO>10<OF>a_i</PLEX>

$\sum_{i=1}^{10} a_i$ <SUM><FROM>i=1<TO>10<OF>a_i</SUM>

77. **<SQRT> : SQuare RooT**

This indicates a square root. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT sqrt  - - (%formel;)+              -- Square root                 -->
```

Example:

$\sqrt{a+b}$ <SQRT>a+b</SQRT>

78. **<SQUARE> : SQUARE**

This indicates data to be displayed as a square. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT square - - (%formel;)+              -- Square                      -->
```

Example:

$(a + b)^2$ <SQUARE>a+b</SQUARE>

79. **<ROOT> : ROOT**

This indicates data to be displayed as a root. A root must contain a degree and an of-operand (<OF> tag, see above). The degree of the root may be tagged <DEGREE> but it is recommended NOT to do so in patent documents. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT root  - - ((%formel;)+,of)          -- Root: degree/of             -->
```

Example:

$\sqrt[4]{a+b}$ $\sqrt[a+b]{x+y}$ <ROOT>4<OF>a+b</ROOT> <ROOT>a+b<OF>x+y</ROOT>

80. **<POWER> : POWER**

This indicates an exponential formula. A power must contain a degree and an of-operand (<OF> tag, see above). The degree element must occur before the of-operand. The degree of the power may be tagged <DEGREE> but it is recommended NOT to do so in patent documents. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT power - - ((%formel;)+,of)          -- Power: degree/of            -->
```

Example:

$(a + b)^4$ $(x + y)^{a+b}$

```
<DF>
<POWER>4<OF>a+b</POWER><POWER>a+b<OF>x+y</POWER>
</DF>
```

81. **<VEC> : VECtors**

This indicates a vector in a formula. By convention these are set in bold roman or medium italic with an arrow above. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

DTD Syntax:

```
<!ELEMENT vec    - - (%formel;)+              -- Designates vector name      -->
```

Example:

$\vec{V}$	<VEC>V</VEC>

82. **<MATRIX> : MATRIces**

This indicates a matrix formula. A matrix is different from a pile because the information is organised into rows as well as columns. The <MATRIX> tag is immediately followed by a column tag <COL> (see below). An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
None

83. **<COL> : COLumn(s) in a matrix**

This indicates a column in a matrix. The <COL> tag is immediately followed by an implied above1 element, specification of which is not required. This is followed by one or more above elements, where the start tag <ABOVE> is required. Alignment is to center by default. An end tag is required.

Required Attribute(s):
None

Optional Attribute(s):
ALIGN= Indicates the alignment of the values within the column. Centre is the default.

DTD Syntax:

```
<!ELEMENT matrix - - (col+)                  -- Matrix is a set of columns  -->
<!ELEMENT col    - -  ((%formel;)+,above+)   -- Top element, above+         -->
<!ATTLIST col align  (%align;) "centre"      -- Column alignment            -->
```

Example:

	<MATRIX>
1 0	<COL>1<ABOVE>2</COL>
2 3	<COL>0<ABOVE>3</COL>
	</MATRIX>

CITATIONS, NAMES AND ADDRESSES

84. These tags may occur within any patent sub-documents, except drawings. In bibliographic data, <SDOBI>, they can occur within tags <B400>, <B560>, <B600>, <B700>, <B861>, <B871> and <B891>. In abstracts <SDOAB>, description <SDODE> and claims <SDOCL> they occur mainly as bibliographic citations within paragraphs. In Search Reports, <SDOSR>, they are combined with bibliographic tags to give citations to data searched. Examples are given for each type of data in Annex D.

85. The tags below are based on two sources:

1) European Workgroup on SGML. *MAJOUR: modular application for Journals*. European Workgroup on SGML (EWS), 1991.

2) Association of American Publishers. Electronic Manuscript Series : *Author's guide to electronic manuscript preparation and markup;* Reference manual on electronic manuscript preparation and markup. Dublin, Ohio : Electronic Publishing Special Interest Group (EPSIG), 1989.

Due acknowledgement is given to these sources.

TABLE OF SGML TAGS				
Parameter entities and tags			**Content**	**Description**
CIT			#PCDATA %PCIT; NCIT; REL	Citation start tag
%PCIT;				**Patent Document Citations**
	%EXTDOC;		see below	Cited Document
	%NAM;		see below	Citation Applicant or Patentee
	PIC		#PCDATA	IPC of Citation
	PNC		#PCDATA	National Classification of Citation
%NCIT;				**Non-Patent Document Citations**
ARTCIT				Article information, citation
	%AUTHGRP;		see below	Author Group
	ATL		#PCDATA	Article Title
	SBT		#PCDATA	Article Subtitle
	JNL			Journal Reference
		JTL	#PCDATA	Journal Title
		SBT	#PCDATA	Subtitle
		JABT	#PCDATA	Journal Abbreviated Title
		PNM	%PARTY;	Publisher's Name and Address
		DATE	see below	Publication Date
		VID	#PCDATA	Volume Identification
		INO	#PCDATA	Journal Issue Number
		ANO	#PCDATA	Abstract Number
	PP			Page Numbers
		PPF	#PCDATA	First Page Number
		PPL	#PCDATA	Last Page Number
	ISSN		#PCDATA	International Standard Serial Number
	CDN		#PCDATA	International Coden

TABLE OF SGML TAGS				
Parameter entities and tags			**Content**	**Description**
	CNG			Conference Proceedings
		CNN	#PCDATA	Conference Number
		CNM	#PCDATA	Conference Name
		DATE	see below	Conference Date
		CNP	#PCDATA	Conference Place
		CNS	#PCDATA	Conference Sponsor
	BOOKID		see below	Article in Book - Book Identification Group
BOOKCIT				Book Information, citation
	%AUTHGRP;		see below	Author Group
	BOOKID		see below	Book Identification Group
	PART		#PCDATA	Part
	SECT		#PCDATA	Section, chapter
	PP			Page Numbers
		PPF	#PCDATA	First Page Number
		PPL		Last Page Number
DBASECIT				Database Information Group, citation
	DBN		#PCDATA	Name of Database
	PNM		%PARTY;	Database Publisher or Service Name and Address
	DBS		#PCDATA	Section of Database
	SRT		#PCDATA	Search Terms
	DATE		see below	Publication Date
OTHCIT			#PCDATA	Other reference (paragraph form)
REL			#PCDATA	Relevant passage
%AUTHGRP;				Author Group
	AUTHOR		%PARTY;	Author's Name
	COAUTH		%PARTY;	Co-author's Name
	COLLAB		%PARTY;	Collaborator
BOOKID				**Book Identification**
	TI		#PCDATA	Title
	SBT		#PCDATA	Subtitle
	EDN		%PARTY;	Editor's Name
	MSN		#PCDATA	Monographic Series Number
	MST		#PCDATA	Monographic Series Title
	ISBN		#PCDATA	International Standard Book Number
	CDN		#PCDATA	International Coden
	ANO		#PCDATA	Abstract Number
	PNM		%PARTY;	Publisher's Name/Address
	VID		#PCDATA	Volume Identification
	NO		#PCDATA	Book Number
	ED		#PCDATA	Edition Statement
	DATE		see below	Publication Date

TABLE OF SGML TAGS				
Parameter entities and tags			**Content**	**Description**
%DOC; %EXTDOC;				**Document Identification**
	DNUM		#PCDATA	Document Number
		ANUM	#PCDATA	Application Number
		PNUM	#PCDATA	Publication Number
	DATE		see below	Document Date
	CTRY		see below	Publishing Country or Organization (ST.3)
	KIND		#PCDATA	Document Kind (ST.16)
	BNUM		#PCDATA	Bulletin Number
	DTXT		#PCDATA	Descriptive Text
PARENT				**Describes parent document**
	DNUM		see above	Document number
	CDOC		%DOC;	Child Document
	PDOC		%DOC;	Parent Document
	PSTA		#PCDATA	Parent Application Status
	PPUB		%DOC;	Patent Associated with Parent Document
%PARTY;				**Individual or Organization Data**
	%NAM;		see below	Individual or organization name
	ADR		see below	Individual or organization address
	DTXT		#PCDATA	Descriptive Text
	RCTRY		CTRY	Country of Residence (ST.3)
	NCTRY		CTRY	Country of Nationality (ST.3)
%NAM;				**General Name**
	TTL		#PCDATA	Title (e.g., Mr. ,Mrs. ,Ms. ,Dr. , CPT, etc.)
	FNM		#PCDATA	Given and Middle Name(s) and/or Initials
	SNM		#PCDATA	Family name , last, surname or, **if unable to distinguish**: whole personal or organisation name
	SFX		#PCDATA	Suffix (e.g., II, Jr., Sr., Esq., et al.)
	IID		#PCDATA	Individual ID Number (e.g., US Social Security)
	IRF		#PCDATA	Individual Reference Number (filing, etc.)
	SYN		#PCDATA	Synonym, cross reference
	ONM		#PCDATA	Organization name
	OID		#PCDATA	Identifying Number of Organization
	ODV		#PCDATA	Division of Organization
	DID		#PCDATA	Identifying Number of Division
ADR				**Address**
	%NAM;		%NAM;	Name, Organization, if part of address
	OMC		#PCDATA	Organization Mail Code
	PBOX		#PCDATA	Post Office Box Number
	STR		#PCDATA	Street, house number or name, district (of city), apt. number, etc.
	CITY		#PCDATA	City or Town
	CNTY		#PCDATA	County, Parish, Department, etc.

TABLE OF SGML TAGS				
Parameter entities and tags			**Content**	**Description**
	STATE		#PCDATA	Region of Country (State, Province, etc.)
	CTRY		#PCDATA	Country
	PCODE		#PCDATA	Postal Code
	EAD		#PCDATA	Electronic Address (e.g., e-mail)
	TEL		#PCDATA	Telephone number, including area or regional code
	FAX		#PCDATA	Facsimile Telephone Number
DATE				**Date**
	DATE		#PCDATA	YYYYMMDD
	TIME		#PCDATA	HHMMSS (UCT)
NOTE: Entities begin with "%" and end with " ;". Entities do not appear as tags in marked up documents. Refer to DTD syntax below and Annex B – DTD.				

For the DTD syntax see Annex B.

PART 2: SGML MARKUP FOR PATENT BIBLIOGRAPHIC DATA

86. This part of the Recommendation provides SGML tags for all bibliographic fields identified in WIPO Standards ST.9 and ST.30. In doing so some inconsistencies and omissions in WIPO Standards ST.9 and ST.30 had to be resolved.

87. INID codes will be used, where available, as the basis of the generic identifiers for the SGML markup start tags. To conform to SGML rules, which do not allow pure numerics as generic identifiers, numeric tags will be preceded by a "B".

88. An attempt has been made to identify all common data elements which may be present in bibliographic data relating to patent documents - typically all data appearing on the title page of patents and/or data required for electronic data exchange. It is realised that this is a difficult task. In order to meet any particular requirement of a patent office not contained in the tags below two courses of action are proposed:

88.1. In the tags beginning <B000> to <B099> these tags are reserved for Office specific tags which do not fit logically into any other numerical area. In addition, if used, these tags should end with the two letter ST.3 code of the country or organisation using the tag, eg. <B050EP>. The DTD should be changed to add any new tags, any receiving office notified that these tags have been added to and, ideally, WIPO should be notified in order that future revisions may include the proposed tag(s). The DTD indicates that this data is optional.

88.2. In the tags beginning <B100> to <B999>, defined below, it is possible to indicate Office specific tags which fit logically into an existing numerical range. However, if used, these additional tags should end with the two letter ST.3 code of the country or organisation using the tag, eg. <B578US>. The DTD should be changed to add any new tags, any receiving office notified that these tags have been added and, ideally, WIPO should be notified in order that future revisions may include the proposed tag(s). The list of tags below contains examples of EPO, JPO and USPTO tags which fall into this category. These are included as examples only and need not form part of the DTD.

89. An example of the markup of bibliographic data can be found in Annex D.

PATENT BIBLIOGRAPHIC DATA

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA						
INID	**Bibliographic tag**			**Content**		**Description**
	B000					**Office Specific System/File Information**
		EPTAGS				EPO-specific tags
			B001EP	#PCDATA		Selective mask for states involved
			B002EP	#PCDATA		Reserved
			B003EP	#PCDATA		Indicator 'no A-doc pub. by EPO'
			B004EP	#PCDATA		Re-establishments of rights indicator
			B005EP	#PCDATA		Printer identification
			B006EP	#PCDATA		Indicator for international applications
			B010EP	#PCDATA		Other rights and legal means of execution
			B011EP	(date, dnum, ctry)		Serial number, date and states
			B020EP	CDATA		Data concerning bibliographic record creation
			B021EP	CDATA		Data concerning bibliographic record correction(s)
			B030EP	CDATA		Legal status data
			B050EP			Free text data
				B051EP	#PCDATA	Language
				B052EP	#PCDATA	Text
			B053EP	#PCDATA		Remarks
			B060EP	CDATA		Receipt of documents data, check data for electronic filing
			B061EP	CDATA		Data relating to fees, financial information
			B070EP	#PCDATA		B Publication technical field
			B078EP	#PCDATA		No opposition filed
		USTAGS				Placeholder for USPTO-specific tags
		JPTAGS				Placeholder for JPO-specific tags
		xxTAGS				Placeholder for other patent offices
10	**B100**					**Document Identification**
11		B110		#PCDATA		Number of the patent document, usually the publication number.
12		B120				Plain language designation
			B121	#PCDATA		Plain language designation of the kind of document, eg. European Patent Application
			B121EP	#PCDATA		Descriptive text for B121 (EPO)
13		B130		#PCDATA		Kind of document according to WIPO ST.16
		B131EP		#PCDATA		Extended kind of document code (EPO)
		B140		DATE		Document date, usually date of publication
19		B190		#PCDATA		Publishing country or organization (ST.3)
		B195		#PCDATA		Source furnishing record

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA					
INID	**Bibliographic tag**			**Content**	**Description**
20	**B200**				**Domestic Filing Data**
21		B210		#PCDATA	Number assigned to the application
		B210EP		#PCDATA	Application number in unstandardised form (EPO)
22		B220		DATE	Application filing date
		B225		DNUM DATE, %PARTY;	Receiving Office data eg. date of receipt of application, office address
23		B230			Other dates
			B231	DATE	Exhibition filing date
			B232	DATE	Complete specification filing date
			B233	DATE	Receipt date at national office
			B234	DATE	Receipt date at international office
			B235	DATE	Date of refusal of application
			B236	DATE	Date of withdrawal
			B237	DATE	Date application deemed withdrawn
			B238EP	DATE	Date of receipt of request for re-establishment of rights
			B238	DATE	Date of application rights re-established
			B239	DATE	Date of revocation
24		B240			Date from which industrial property rights may have effect
			B241	DATE	Date of request for examination
			B242	DATE	Date of despatch of 1st examination report
			B243	DATE	Date of patent maintained as amended
			B244	(date, cntry+)	Request for conversion to national application
			B245	DATE	Date of suspension/interruption of proceedings
			B245EP	#PCDATA	Suspension/interruption indicator (EPO)
			B246	DATE	Date of resumption of proceedings
			B248	DATE	Date of notification rights after appeal
25		B250		#PCDATA	Language of original filing (ISO 639)
		B250EP		#PCDATA	Admissable non-EPO language (EPO)
		B251EP		#PCDATA	Procedural language (EPO)
26		B260		#PCDATA	Language of application publication (ISO 639)
30	**B300**				**Priority Data**
31		B310		#PCDATA	Priority application number
		B310EP		#PCDATA	Priority application number in unstandardised form (EPO)
32		B320		DATE	Date of filing of priority application
33		B330		CTRY	Allotting country or organization (ST.3)
34		B340		CTRY	Country party to the Paris Convention (ST.3)
		B345		%DOC;	Patent family Information
		B345EP		%DOC;	INPADOC patent family information (EPO)

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA					
INID	**Bibliographic tag**			**Content**	**Description**
40	**B400**				**Public Availability Dates**
		B405		%DOC;	Patent bulletin / gazette information
41		B410		%DOC;	Unexamined, not printed document without grant
42		B420		%DOC;	Examined, not printed document without grant
43		B430		%DOC;	Unexamined printed document without grant
44		B440		%DOC;	Examined printed document without grant
45		B450		%DOC;	Printed document with grant (e.g. US Pat)
		B451EP		DATE	Date of announcement (EPO)
46		B460		%DOC;	Document claim(s) only available
47		B470		%DOC;	Not printed document with grant
		B472			Term of grant
			B473	DATE	Disclaimer date
			B474	#PCDATA	Term of grant
			B475	%DOC;	Lapse of patent
		B476		%DOC;	Invalidation of patent
		B477		%DOC;	Document printed as amended, (eg. EPO B2)
50	**B500**				**Technical Information**
51		B510			International Patent Classification (IPC) data
			B511	#PCDATA	Main classification
			B512	#PCDATA	Further classification
			B513	#PCDATA	Additional information
			B514	#PCDATA	Linked indexing code
			B515	#PCDATA	Unlinked indexing code
			B516	#PCDATA	Edition of IPC
			B517EP	#PCDATA	Non-obligatory supplementary class. (EPO)
52		B520			Domestic or national classification
			B521	#PCDATA	Main classification
			B522	#PCDATA	Further classification
			B523	#PCDATA	Additional information
			B524	#PCDATA	Linked indexing code
			B525	#PCDATA	Unlinked indexing code
			B526	#PCDATA	Edition of classification
			B527	#PCDATA	Country code (ST.3)
			B528US	#PCDATA	Digest reference (USPTO)
53		B530		#PCDATA	Universal Decimal Classification
54		B540			Title of the invention
			B541	#PCDATA	Language of title (ISO 639)
			B542	#PCDATA	Title of invention
55		B550			Keywords or descriptors
			B551	#PCDATA	Language (ISO 639)
			B552	#PCDATA	Keywords or descriptors

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA					
INID	**Bibliographic tag**			**Content**	**Description**
56		B560			List of prior art documents, if separate from descriptive text, eg. on the title page. Where the search report is a sub-document use <SDOSR> plus the tags below)
			B561	#PCDATA,%PCIT; REL	Patent citation (with B563 and B564)
			B561EP	#PCDATA	Number of copies of citations (EPO)
			B562	#PCDATA,%NCIT;	Non-Patent citation (with B563 and B564)
			B563	#PCDATA	Category of cited document (office dependent)
			B564	#PCDATA	Claims to which cited document is relevant
			B565	DATE	Date of completion of search report
			B565EP	DATE	Date of drawing up and despatch of supplementary search report (EPO)
			B566	DATE	Date of mailing of search report
			B566EP	DATE	Date of despatch of correction to search report (EPO)
			B567	%PARTY;	Place of search - international search authority
			B568	%DOC;	Publication of search report
			B569	%NAM;	Search report examiner
57		B570			Abstract or claim, use <SDOAB> and <SDOCL> where possible
			B571	#PCDATA	Language of abstract
			B572	%DOC;	Abstract doc. information, eg. abstract number if different to doc. number
			B575	#PCDATA	Language of claims
			B576	%DOC;	Claims doc. info.
			B577	#PCDATA	Number of claims, eg claims number if different to doc. number
			B578US	#PCDATA	Exemplary claim number (USPTO)
58		B580			Field of search
			B581	#PCDATA	IPC
			B582	#PCDATA	National classification
			B583US	#PCDATA	Field of mechanized search (USPTO)
			B584US	#PCDATA	Other field of search (USPTO)
		B590			Information about specification and drawing, for main data use <SDODE> and <SDODR> respectively
			B591	#PCDATA	Language of specification (ISO 639)
			B592	#PCDATA	Number of text pages
			B595	#PCDATA	Number of drawing sheets
			B596	#PCDATA	Number of figures
			B597	#PCDATA	Number of attached image files
			B598	#PCDATA	Figure number on first (title) page, abstract drawing
			B599EP	#PCDATA	Subsequently filed technical data (EPO)

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA						
INID	**Bibliographic tag**			**Content**		**Description**
60	**B600**					**References to other legally or procedurally related domestic patent documents**
61		B610		PARENT		Earlier document to which this Is an addition
62		B620		PARENT		Earlier application from which the present document has been divided out
		B620EP		PARENT		Other types of relationship (EPO)
			B621EP	%DOC;		Relation for application numbers (EPO)
			B622EP	%DOC;		Relation for publication numbers (EPO)
63		B630				Continuations
			B631	PARENT		Earlier application of which the present document is a continuation
			B632	PARENT		Document of which this is a continuation-in-part
			B633	PARENT		Document of which this is a continuing reissue
64		B640		PARENT		Document being reissued
		B645		PARENT		Document of which this is a reexamination
65		B650		PARENT		Previously published document concerning same application
		B655		PARENT		Document previously published by another country/organisation
66		B660		PARENT		Document for which this is a substitute
		B665				Patent correction information
			B666	%DOC;		Document being corrected
			B667	#PCDATA		Type of correction
			B668	#PCDATA		Descriptive text relating to correction
67		B670		PARENT		Document on which utility model is based
70	**B700**					**Parties Concerned with the Document**
71		B710				Applicant information
			B711	%PARTY;		Name and address
				B711EP	%PARTY;	Name and address for correspondence (EPO)
				B713EP	#PCDATA	Applicant authorisation number (Art.133 (3), EPC) (EPO)
				B716EP	CTRY	Designated contracting states for applicant (EPO)
				B717EP	CTRY	Designated extension states for applicant (EPO)
				B718EP	DATE	Effective date for transfer of rights (EPO)
			B712US	empty		Rule 47 Indicator (USPTO)
72		B720				Inventor information
			B721	%PARTY;		Name and address
				B724EP	#PCDATA	Waiver by inventor of information pursuant to Rule 17(3), EPC (EPO)
				B725EP	#PCDATA	The inventor has agreed to waive his entitlement to designation, Rule 18(3), EPC. (EPO)
				B726EP	#PCDATA	Origin of applicant's rights if not inventor: as employee (EPO)
				B727EP	#PCDATA	Origin of applicant's rights if not inventor: under agreement (EPO)

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA						
INID	**Bibliographic tag**			**Content**		**Description**
				B728EP	#PCDATA	Origin of applicant's rights if not inventor: as co-inventor (EPO)
				B729EP	#PCDATA	Origin of applicant's rights if not inventor: as successor in title (EPO)
73		B730				Grantee (assignee) information
			B731	%PARTY;		Name and address
				B736EP	CTRY	Designated states for grantee (EPO)
				B737EP	CTRY	Designated extension states for grantee (EPO)
				B738EP	DATE	Effective date for transfer of rights (EPO)
			B732US	#PCDATA		Assignee type code (USPTO)
74		B740				Attorney, agent, representative information
			B741	%PARTY;		Attorney or Agent name and address
				B742EP	#PCDATA	General authorisation number (EPO)
		B745				Persons acting upon the document
			B746	%NAM;		Primary examiner
			B747	%NAM;		Assistant examiner
			B748US	#PCDATA		Art Group/Unit (USPTO)
Note: INID Codes 75 and 76 have not been implemented						
		B780				Opposition data
			B781	(dnum,date,kind?) %PARTY;		Opponent data, name and address
				B784	%PARTY;	Attorney or agent information
				B785	DATE	Opposition deemed not to have been filed
				B786	DATE	Opposition inadmissable
				B787	DATE	Date of rejection of opposition
				B788	DATE	Date of termination of opposition
				B789	#PCDATA	No opposition filed
		B790				Licensee Data
			B791	(dnum,date,kind) %PARTY;		Licensee data, name and address
				B794	%PARTY;	Attorney or agent information
				B796	CTRY	Designated countries for license
80 **90**	**B800**					**International Convention Data other than the Paris Convention**
81		B810		CTRY		Designated States - PCT
		B820		CTRY		PCT Elected States
83		B830				Microorganism deposits information
			B831	#PCDATA		Deposit file number
			B832	#PCDATA		Authority where deposit made
			B833	DATE		Date of deposit
84		B840		CTRY		Designated contracting states
		B844EP				States to which the application/patent is extended (EPO)

TABLE OF SGML TAGS FOR BIBLIOGRAPHIC DATA						
INID	**Bibliographic tag**			**Content**		**Description**
			B845EP	%DOC;		Extended state data (EPO)
				B846EP	DATE	End data (withdrawal) (EPO)
85		B850		DATE		Date of PCT Articles 22/39 fulfillment
86		B860				PCT or regional filing information
			B861	%DOC;		Document Identification
			B862	#PCDATA		Filing Language (ISO 639)
			B863	DATE		PCT º 371 Date
			B864	DATE		PCT º 102(e) Date
87		B870				PCT or regional publication information
			B871	%DOC;		Document identification
			B872	#PCDATA		Publication language (ISO 639)
88		B880		%DOC;		Deferred publication of search report
89		B890				CMEA Agreement data
			B891	%DOC;		Havana agreement document identification
			B892	DATE		Havana agreement date of property rights
	B900					Miscellaneous data
91		B910		DATE		Date PCT application no longer has effect

For the DTD syntax see Annex B.

INDEX OF ELEMENTS AND ATTRIBUTES

(For Part 1 only)

ELEMENTS

ATTRIBUTES

ANNEX A: SGML DECLARATION FOR PATENT DOCUMENTS

The ST.32 SGML Declaration below contains the reference concrete syntax to be applied when exchanging patent data in roman languages. It is not necessary, usually, to include this declaration and/or the DTD with the patent document data being exchanged. The declaration and the DTD, below, shall be deemed as the defaults for this purpose. It is stressed that the declaration may be modified, as required, for a particular language's character set, eg. for Russian or Japanese; or for particular parsers, etc.

If, for any reason, patent data is exchanged using a different character set then the receiving agent should be informed and the declaration modified accordingly. It is strongly advised that, for roman languages, this declaration should be the default since ISO 646 is processable by most systems; although extension, to ASCII 437, for example, may be an acceptable second level alternative.

```
<!SGML "ISO 8879:1986"
-- Default SGML declaration using the Reference concrete syntax --

CHARSET
BASESET  "ISO 646-1983//CHARSET
          International Reference Version (IRV)//ESC 2/5 4/0"
DESCSET   0     9    UNUSED
          9     2    9
          11    2    UNUSED
          13    1    13
          14    6    UNUSED
          20    3    UNUSED
          23    3    UNUSED
          26    1    UNUSED
          27    5    UNUSED
          32    95   32
          127   1    UNUSED
          128   127  128
CAPACITY SGMLREF
         TOTALCAP 60000
         ENTCAP   35000
         ENTCHCAP 35000
         ELEMCAP  35000
         GRPCAP   35000
         EXGRPCAP 35000
         EXNMCAP  35000
         ATTCAP   35000
         ATTCHCAP 35000
         AVGRPCAP 35000
         NOTCAP   35000
         NOTCHCAP 35000
         IDCAP    35000
         IDREFCAP 35000
         MAPCAP   35000
         LKSETCAP 35000
         LKNMCAP  35000
SCOPE    DOCUMENT
SYNTAX
SHUNCHAR CONTROLS 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
                  18 19 22 23 24 25 27 28 29 30 31 127
BASESET  "ISO 646-1983//CHARSET
          International Reference Version (IRV)//ESC 2/5 4/0"
DESCSET  0      128    0
FUNCTION RE     13
         RS     10
         SPACE  32
         TAB    SEPCHAR 9
NAMING   LCNMSTRT ""
         UCNMSTRT ""
         LCNMCHAR "-."
         UCNMCHAR "-."
         NAMECASE GENERAL YES
                  ENTITY  NO
DELIM    GENERAL SGMLREF
         SHORTREF SGMLREF
NAMES    SGMLREF
QUANTITY SGMLREF LITLEN 500 ATTCNT 50
FEATURES
MINIMIZE DATATAG NO     OMITTAG  YES    RANK     NO     SHORTTAG YES
LINK     SIMPLE  NO     IMPLICIT NO     EXPLICIT NO
OTHER    CONCUR  NO     SUBDOC   YES 1  FORMAL   YES
APPINFO NONE>
```

ANNEX B: DOCUMENT TYPE DEFINITION FOR PATENT DOCUMENTS

```
<!--                                                                    -->
<!-- DOCUMENT TYPE DEFINITION FOR PATENT DOCUMENTS FOR WIPO ST.32       -->
<!-- EPO/USPTO revised standard WIPO ST.32

     DTD (EPO Version: 3.4   Nov 1995)                                 -->
<!--                                                                    -->
<!-- ****************************************************************  -->
<!--                                                                    -->
<!DOCTYPE patdoc [
<!--                                                                    -->
<!-- ******************* ISO CHARACTER ENTITIES *******************     -->
<!-- (C) International Organization for Standardization 1986
     Permission to copy in any form is granted for use with
     conforming SGML systems and applications as defined in
     ISO 8879, provided this notice is included in all copies.         -->
<!--                                                                    -->
<!ENTITY % ISOnum PUBLIC
  "ISO 8879-1986//ENTITIES Numeric and Special Graphic//EN">
%ISOnum;
<!ENTITY % ISOlat1 PUBLIC
  "ISO 8879-1986//ENTITIES Added Latin 1//EN">
%ISOlat1;
<!ENTITY % ISOlat2 PUBLIC
  "ISO 8879-1986//ENTITIES Added Latin 2//EN">
%ISOlat2;
<!ENTITY % ISOpub PUBLIC
  "ISO 8879-1986//ENTITIES Publishing//EN">
%ISOpub;
<!ENTITY % ISOtech PUBLIC
  "ISO 8879-1986//ENTITIES General Technical//EN">
%ISOtech;
<!ENTITY % ISOgrk1  PUBLIC
  "ISO 8879-1986//ENTITIES Greek Letters//EN">
%ISOgrk1;
<!ENTITY % ISOgrk2  PUBLIC
  "ISO 8879-1986//ENTITIES Monotoniko Greek//EN">
%ISOgrk2;
<!ENTITY % ISOgrk3  PUBLIC
  "ISO 8879-1986//ENTITIES Greek Symbols//EN">
%ISOgrk3;
<!ENTITY % ISOgrk4  PUBLIC
  "ISO 8879-1986//ENTITIES Alternative Greek Symbols//EN">
%ISOgrk4;
<!ENTITY % ISOcyrl  PUBLIC
  "ISO 8879-1986//ENTITIES Russian Cyrillic//EN">
%ISOcyrl;
<!ENTITY % ISOcyr2 PUBLIC
  "ISO 8879-1986//ENTITIES Non-Russian Cyrillic//EN">
%ISOcyr2;
<!ENTITY % ISOamso  PUBLIC
  "ISO 8879-1986//ENTITIES Added Math Symbols: Ordinary//EN">
%ISOamso;
<!ENTITY % ISOamsb  PUBLIC
  "ISO 8879-1986//ENTITIES Added Math Symbols: Binary Operators//EN">
%ISOamsb;
<!ENTITY % ISOamsr  PUBLIC
  "ISO 8879-1986//ENTITIES Added Math Symbols: Relations//EN">
%ISOamsr;
<!ENTITY % ISOamsn  PUBLIC
  "ISO 8879-1986//ENTITIES Added Math Symbols: Negated Relations//EN">
%ISOamsn;
<!ENTITY % ISOamsa  PUBLIC
  "ISO 8879-1986//ENTITIES Added Math Symbols: Arrow Relations//EN">
%ISOamsa;
<!ENTITY % ISOamsc  PUBLIC
  "ISO 8879-1986//ENTITIES Added Math Symbols: Delimiters//EN">
%ISOamsc;
<!ENTITY % ISObox  PUBLIC
  "ISO 8879-1986//ENTITIES Box and Line Drawing//EN">
%ISObox;
<!ENTITY % ISOdia  PUBLIC
```

```
  "ISO 8879-1986//ENTITIES Diacritical Marks//EN">
%ISOdia;
<!--                                                                        -->
<!-- (C) International Organization for Standardization 1991
     Permission to copy in any form is granted for use with
     conforming SGML systems and applications as defined in
     ISO 8879, provided this notice is included in all copies.              -->
<!--                                                                        -->
<!ENTITY % ISOAMSA  PUBLIC
  "ISO 9573-13:1991//ENTITIES Added Math Symbols: Arrow Relations//EN">
%ISOAMSA;
<!ENTITY % ISOAMSB  PUBLIC
  "ISO 9573-13:1991//ENTITIES Added Math Symbols: Binary Operators//EN">
%ISOAMSB;
<!ENTITY % ISOAMSC  PUBLIC
  "ISO 9573-13:1991//ENTITIES Added Math Symbols: Delimiters//EN">
%ISOAMSC;
<!ENTITY % ISOAMSN  PUBLIC
  "ISO 9573-13:1991//ENTITIES Added Math Symbols: Negated Relations//EN">
%ISOAMSN;
<!ENTITY % ISOAMSO  PUBLIC
  "ISO 9573-13:1991//ENTITIES Added Math Symbols: Ordinary//EN">
%ISOAMSO;
<!ENTITY % ISOAMSR  PUBLIC
  "ISO 9573-13:1991//ENTITIES Added Math Symbols: Relations//EN">
%ISOAMSR;
<!ENTITY % ISOCHEM  PUBLIC
  "ISO 9573-13:1991//ENTITIES Chemistry//EN">
%ISOCHEM;
<!ENTITY % ISOGRK3  PUBLIC
  "ISO 9573-13:1991//ENTITIES Greek Symbols//EN">
%ISOGRK3;
<!ENTITY % ISOGRK4  PUBLIC
  "ISO 9573-13:1991//ENTITIES Alternative Greek Symbols//EN">
%ISOGRK4;
<!ENTITY % ISOMFRK  PUBLIC
  "ISO 9573-13:1991//ENTITIES Math Alphabets: Fraktur//EN">
%ISOMFRK;
<!ENTITY % ISOMOPF  PUBLIC
  "ISO 9573-13:1991//ENTITIES Math Alphabets: Open Face//EN">
%ISOMOPF;
<!ENTITY % ISOMSCR  PUBLIC
  "ISO 9573-13:1991//ENTITIES Math Alphabets: Script//EN">
%ISOMSCR;
<!ENTITY % ISOPUB   PUBLIC
  "ISO 9573-13:1991//ENTITIES Publishing//EN">
%ISOPUB;
<!ENTITY % ISOTECH  PUBLIC
   "ISO 9573-13:1991//ENTITIES General Technical//EN">
%ISOTECH;
<!-- (C) International Organization for Standardization 1992
    Permission to copy in any form is granted for use with
    conforming SGML systems and applications as defined in
    ISO 8879, provided this notice is included in all copies.               -->
<!--ENTITY % ISOCH    PUBLIC
   "ISO 9573-11:1992//ENTITIES Chemistry//EN">
%ISOCH;-->
<!--                                                                        -->
<!-- ENTITY % patspec SYSTEM "patspent.ent"                                 -->
<!-- Special characters used in patent documents but not defined
     in public sets. See Annex C of ST.32.
     When including this file reference in the DTD the reference may
     have to be modified depending on the system and parser in use.
     Note that this entity is commented out of this DTD.                    -->
<!-- %patspec;                                                              -->
<!--                                                                        -->
<!--                                                                        -->
<!-- ******************** GROUPED ENTITIES       ********************      -->
<!--                                                                        -->
<!-- Types of embedded images and captions                                  -->
<!ENTITY % img  "emi | emr | ele | rti | txf | gai "
>
<!-- Types of highlighting, superscripts, subscripts, and floating accents  -->
<!-- fgrf - figure reference and clrf - claims reference
            as forseen for later use                                        -->
```

```
<!ENTITY % hil  "b | i | o | u | bai | han | chf | fla | ltl | sb | sp "
>
<!-- Types of lists                                                        -->
<!ENTITY % lst  "dl | ol | sl | ul"
>
<!-- Displayed and in-line math formulae                                  -->
<!-- altmath is forseen for later use                                     -->
<!ENTITY % math  "f | df | dfg | dfref | altmath"
>
<!-- Chemical formulae, chemical reactions, and chemical structure diagrams  -->
<!ENTITY % chem  "che | chr | crf"
>
<!-- Types of tables                                                      -->
<!-- calstab is forseen for later use                                     -->
<!ENTITY % table "tab | calstab"
>
<!-- Five types of complex material inside or outside of paragraphs       -->
<!-- bioseq is forseen for later use                                      -->
<!ENTITY % compl "(%lst;)|(%table;)|(%math;)|(%chem;)|bioseq"
>
<!-- Name of an individual or organization                                -->
<!ENTITY % nam   "ttl?,(fnm?&snm?),sfx?,iid?,irf?,onm?,syn*,oid?,(odv,did)*"
>
<!-- Components of party                                                  -->
<!ENTITY % party "(%nam;),adr?,dtxt*,rctry?,nctry?"
>
<!-- Components of the author group                                       -->
<!ENTITY % authgrp "(author|coauth|collab)+"
>
<!-- Components of document identification                               -->
<!ENTITY % doc   "(dnum?&date?),ctry?,kind?,bnum?,dtxt*"
>
<!ENTITY % extdoc  "(dnum&date?),ctry?,kind?,bnum?,dtxt*"
>
<!-- Components of a patent document citation                            -->
<!ENTITY % pcit "(%extdoc;),(%nam;)*,pic*,pnc*"
>
<!-- Components of a non-patent document citation                        -->
<!ENTITY % ncit "(artcit|bookcit|dbasecit|othcit)"
>
<!-- Contents of a paragraph                                              -->
<!--                                                                     -->
<!ENTITY % ptext "#PCDATA|(%hil;)|(%img;)|(%compl;)|(cit) "
>
<!ENTITY % floats "dp|txf|chg|foo|for|br|pcl|pln|rti|emi"
>
<!--                                                                     -->
<!-- ******************* GROUPED ATTRIBUTES     *******************     -->
<!--                                                                     -->
<!ENTITY % imgfmt "ST33 | TIFF | CGM | G3 | G4 | EPS |
                   IGES | JPEG | MPEG | GEM | AI | GIF | PCT | BMP |
                   PCX | WMF | PGL | WPG"
                                                -- ST33 + de-facto standards-->
<!ENTITY % align  "center | centre | left | right"
                                                -- alignment          -->
<!ENTITY % style  "single | double | triple | dash | dots | bold"
                                                -- style of a line or mark  -->
<!ENTITY % type   "dot | dotdot | dot3 | dot4 | tie | tiebrace | circle |
                   hat | hacek | acute | grave | cedil | ring | macron |
                   ogonek | dblac | breve | tilde | vec | rvec |
                   dyad | caret | prime | dprime | plus | bar | none"
                                                -- type of a line or mark   -->

<!--                                                                     -->
<!-- ******************* PATENT DOCUMENT        *******************     -->
<!--                                                                     -->
<!ELEMENT patdoc - -      (sdobi,(sdoab*&sdode?&sdocl*&sdodr?&sdosr?))
                          +(%floats;)
>
<!ATTLIST patdoc cy       CDATA   #IMPLIED    -- Country, organis. St.3      --
                 dnum     CDATA   #IMPLIED    -- Identification number       --
                 date     NUMBER  #IMPLIED    -- date of publication         --
                 file     CDATA   #IMPLIED    -- file identification         --
                 kind     CDATA   #IMPLIED    -- Kind of patent St.16        --
                 status   CDATA   #IMPLIED    -- Status of the patent doc.   --
```

```
                dtd     NUTOKEN #IMPLIED    -- Version NUMBER of DTD       -->
<!--                                                                       -->
<!-- ******************** PATENT SUB-DOCUMENTS   ******************         -->
<!--                                                                       -->
<!--      sdobi                                  Bibliography, defined later -->
<!ELEMENT sdoab  - o     ((h|p|pc|%img;)+)      -- Abstract                 -->
<!ELEMENT sdodr  - o     (emi+)                 -- Drawings                 -->
<!ELEMENT sdode  - o     (h|p|pc|%img;)+        -- Description              -->
<!ELEMENT sdocl  - o     (h|p|%lst;)+           -- Claims                   -->
<!ATTLIST (sdobi|sdoab|sdode|sdocl|sdodr|sdosr)
                la      NAME    #IMPLIED       -- language (ISO 639)       --
                cy      NAME    #IMPLIED       -- country code             --
                status  CDATA   #IMPLIED
                                               -- Status of the sub-doc.   -->
<!--      sdosr                                  Search report defined later -->
<!--                                                                       -->
<!-- ******************** MAJOR CONTENTS OF SUBDOCUMENTS ***********         -->
<!--                                                                       -->
<!ELEMENT h      - -     (%ptext;)+             -- Headers                  -->
<!ATTLIST h      lvl     NUMBER  #IMPLIED       -- Header level             --
                 align   (%align;) "left"       -- Alignment                -->
<!--                                                                       -->
<!ELEMENT p      - o     (%ptext;)+             -- Paragraph elements       -->
<!ATTLIST p      n       NUMBER  #IMPLIED    -- Reference number            --
                 align   (%align;) "left"       -- Alignment                -->
<!ELEMENT pc     - o     (%ptext;)+             -- Paragraph continuation   -->
<!--                                                                       -->
<!-- ******************** HIGHLIGHTED ELEMENTS   ******************         -->
<!--                                                                       -->
<!ELEMENT b      - -     (%ptext;)+ -(b)        -- Bold                     -->
<!ELEMENT bai    - -     (%ptext;)+ -(bai|han)  -- Expanded font            -->
<!ELEMENT han    - -     (%ptext;)+ -(han|bai)  -- Compressed font          -->
<!ELEMENT i      - -     (%ptext;)+ -(i)        -- Italic                   -->
<!ELEMENT o      - -     (%ptext;)+ -(o|ov)     -- 'Over' embellishment     -->
<!ATTLIST o      pos     (above|mid) "above"    -- pos. of 'over' embell.   --
                 type    (%type;)    "bar"      -- type  of a line or mark  --
                 style   (%style;)   "single"   -- style of a line or mark  -->
<!ELEMENT u      - -     (%ptext;)+ -(u|ov)     -- Underscore embellishment -->
<!ATTLIST u      type    (%type;)    "bar"      -- type  of a line or mark  --
                 style   (%style;)   "single"   -- style of a line or mark  -->
<!ELEMENT sp     - -     ((%hil;)|(#PCDATA))* -(fla)
                                                --  Superscript in gen. text-->
<!ELEMENT sb     - -     ((%hil;)|(#PCDATA))* -(fla)
                                                --  Subscript in gen. text  -->
<!ATTLIST (sp|sb) pos    (PRE|MID|POST) "POST"  -- Position (default post)  -->
<!--                                                                       -->
<!--  The following elements are for review / forseen for later use
  ELEMENT fgrf  - - (#PCDATA)                   Reference to a figure
  ELEMENT clrf  - - (#PCDATA)                   Reference to a claim        -->
<!--                                                                       -->
<!-- ******************** CONSTRUCTS             ******************         -->
<!--                                                                       -->
<!ELEMENT chf    - -     (((#PCDATA)|(%hil;))+, chfbr)
                                               -- Character fraction       -->
<!ATTLIST chf    align   (%align;) "centre"     --    alignment            -->
<!ELEMENT chfbr  - o     ((#PCDATA)|(%hil;))+   -- Char fraction break      -->
<!ATTLIST chfbr  type    (%type;)  "bar"
                 style   (%style;) "single"
>
<!--                                                                       -->
<!ELEMENT fla    - -     (((#PCDATA)|(%hil;))+, flac)
                                               -- Floating accent base     -->
<!ELEMENT flac   - o     ((#PCDATA)|(%hil;))+   -- Floating accent
                                                   (upperpart)             -->
<!ATTLIST flac   pos     (ABOVE|MID|BELOW) "ABOVE"
                                               -- Position (default ABOVE) -->
<!--                                                                       -->
<!-- ******************** ALL KINDS OF LISTS     ******************         -->
<!--                                                                       -->
<!ELEMENT dl     - -     (dt,dd)+               -- Definition list          -->
<!ATTLIST dl     tsize   NUMBER  #IMPLIED       -- Term size attribute      --
                 compact (compact) #IMPLIED     -- Spacing between items    -->
<!ELEMENT dt     - o     (%ptext;)+             -- Definition term          -->
<!ELEMENT dd     - o     ((%ptext;)|p)+         -- Definition description   -->
<!ELEMENT ol     - -     (li)+                  -- Ordered list             -->
```

```
<!ATTLIST ol     compact  (compact) #IMPLIED     -- Spacing between items    --
                 level    NUMBER  #IMPLIED       -- Nesting level of list    --
                 prefix   CDATA   #IMPLIED       -- Prefix for each list item--
                 numstyle CDATA   #IMPLIED       -- Numbering style          -->
<!ELEMENT sl     - -      (li)+                  -- Simple list              -->
<!ATTLIST sl     compact  (compact) #IMPLIED     -- Spacing between items    --
                 level    NUMBER  #IMPLIED       -- Nesting level of list    -->
<!ELEMENT ul     - -      (li)+                  -- Unordered list           -->
<!ATTLIST ul     st       CDATA   #REQUIRED      -- Ulist symbol             --
                 level    NUMBER  #IMPLIED       -- Nesting level of list    --
                 compact  (compact) #IMPLIED     -- Spacing between items    -->
<!ELEMENT li     - o      ((%ptext;)|p)+         -- List item                -->
<!--                                                                         -->
<!-- ******************** IMAGE RELATED ELEMENTS ******************         -->
<!--                                                                         -->
<!ELEMENT emi    - o      EMPTY                  -- Embedded image           -->
<!ATTLIST emi    id       NUTOKEN #REQUIRED      -- Image identity           --
                 he       NUMBER  #REQUIRED      -- Height in mm             --
                 wi       NUMBER  #REQUIRED      -- Width in mm              --
                 file     CDATA   #IMPLIED       -- File name of image       --
                 lx       NUMBER  #IMPLIED       -- X-coord 1/10 mm          --
                 ly       NUMBER  #IMPLIED       -- Y-coord 1/10 mm          --
                 imf      (%imgfmt;) #IMPLIED    -- Format stored emi        --
                 ti       (AD|CF|CI|CP|DN|DR|FG|FF|GR|MF|PA|PH|SR|TB|TX|UI)
                                  #IMPLIED       -- Image type               -->
<!ELEMENT emr    - o      EMPTY                  -- Reference to emi         -->
<!ATTLIST emr    id       NUTOKEN #REQUIRED
>
<!ELEMENT ele    - -      (%ptext;)+             -- Figure caption           -->
<!ATTLIST ele    id       NUTOKEN #REQUIRED
>
<!ELEMENT gai    - -      CDATA                  -- Gaiji character          -->
<!ATTLIST gai    id       NUTOKEN #REQUIRED
>
<!ELEMENT rti    - -      CDATA                  -- Replace text with image  -->
<!ATTLIST rti    id       NUTOKEN #REQUIRED      -- rti identity             --
                 he       NUMBER  #REQUIRED      -- Height in mm             --
                 wi       NUMBER  #REQUIRED      -- Width in mm              --
                 file     CDATA   #IMPLIED       -- File name of image       --
                 lx       NUMBER  #IMPLIED       -- X-coord  1/10 mm         --
                 ly       NUMBER  #IMPLIED       -- Y-coord  1/10 mm         --
                 imf      (%imgfmt;) #IMPLIED    -- image format             -->
<!--                                                                         -->
<!-- ******************** Miscellaneous          ******************         -->
<!--                                                                         -->
<!ELEMENT br     - o      EMPTY                  -- Line brea                -->
<!--                                                                         -->
<!ELEMENT foo    - -      (%ptext;)+             -- Footnotes                -->
<!ATTLIST foo    fn       NUTOKEN #REQUIRED      -- Footnote id.             -->
<!ELEMENT for    - -      (%ptext;)+             -- Footnote reference       -->
<!ATTLIST for    fnref    NUTOKEN #REQUIRED      -- Footref id.              -->
<!--                                                                         -->
<!ELEMENT ltl    - -      CDATA                  -- Literal text             -->
<!ATTLIST ltl    wi       NUMBER  #IMPLIED       -- Width in mm              -->
<!--                                                                         -->
<!ELEMENT chg    - -      (%ptext;)+             -- Change of document parts -->
<!ATTLIST chg    date     NUMBER  #REQUIRED      -- Date of change text      --
                 status   CDATA   #REQUIRED      -- Status of change         -->
<!--                                                                         -->
<!-- ******************** PATENT STRUCTURE TAGS  ******************         -->
<!--                                                                         -->
<!ELEMENT txf    - o      EMPTY                  -- Text frame               -->
<!ATTLIST txf    fr       NUTOKEN #REQUIRED      -- Txf identity             --
                 he       NUMBER  #REQUIRED      -- Height in mm             --
                 wi       NUMBER  #REQUIRED      -- Width in mm              --
                 lx       NUMBER  #IMPLIED       -- X-coord  1/10 mm         --
                 ly       NUMBER  #IMPLIED       -- Y-coord  1/10 mm         --
                 font     CDATA   #IMPLIED       -- Font name                --
                 size     NUMBER  #IMPLIED       -- Font point size          --
                 ls       NUTOKEN #IMPLIED       -- Line spacing             -->
<!ELEMENT dp     - o      EMPTY                  -- Doc. page break          -->
<!ATTLIST dp     n        NMTOKEN #REQUIRED      -- Doc. page number         -->
<!ELEMENT pcl    - o      EMPTY                  -- Page column              -->
<!ATTLIST pcl    n        NMTOKEN #REQUIRED      -- Page column number       -->
<!ELEMENT pln    - o      EMPTY                  -- Page line                -->
```

```
<!ATTLIST pln    n        NMTOKEN #REQUIRED      -- Page line number         -->
<!--                                                                        -->
<!-- ******************** Pseudo IN-LINE CHEMISTRY *****************        -->
<!--                                                                        -->
<!ELEMENT che    - -      (%ptext;)*             -- Chemical formula         -->
<!ATTLIST che    id       ID      #IMPLIED       -- chem reaction id         --
                 num      CDATA   #IMPLIED       -- specific number          -->
<!ELEMENT chr    - -      (%ptext;)*             -- Chemical reaction        -->
<!ATTLIST chr    id       ID      #IMPLIED       -- chem reaction id         --
                 num      CDATA   #IMPLIED       -- specific number          -->
<!ELEMENT crf    - o      EMPTY                  -- Reference to che. formula-->
<!ATTLIST crf    refid    IDREF   #REQUIRED      -- reference id.            -->
<!--                                                                        -->
<!-- ******************** TABLE TAGS  -  ELEMENTS AND ATTRIBUTES ***        -->
<!--                                                                        -->
<!ENTITY  % rowcnt "(tti?)|(tch*,tsh*)|(tsb?,cel*)" -- Head + start of body  -->
<!--                                                                        -->
<!-- calstab forseen for later use                                         -->
<!ELEMENT calstab - o     EMPTY                  -- CALS table               -->
<!--                                                                        -->
<!ELEMENT tab    - -      ((row,(%rowcnt;))|p)+  -- Main structure          -->
<!ATTLIST tab    co       NUMBER  #REQUIRED      -- Number of columns        --
                 or       (L|P)   "P"            -- Orientation              --
                 id       CDATA   #IMPLIED       -- Identifier               --
                 cs       CDATA   #IMPLIED       -- Col separators           --
                 rs       CDATA   #IMPLIED       -- Row separators           -->
<!ELEMENT tti    - o      (%ptext;)*             -- Table title              -->
<!ATTLIST tti    al       (L|R|C) "C"            -- Text alignment           -->
<!ELEMENT tch    - o      (%ptext;)*             -- Column header            -->
<!ATTLIST tch    cb       NUMBER  #IMPLIED       -- Start column            --
                 ce       NUMBER  #IMPLIED       -- End column              --
                 al       (L | R | C) "C"        -- Text alignment          -->
<!ELEMENT tsh    - o      (%ptext;)*             -- Column subhead           -->
<!ATTLIST tsh    cb       NUMBER  #IMPLIED       -- Start column            --
                 ce       NUMBER  #IMPLIED       -- End column              --
                 al       (L | R | C)  "C"       -- Text alignment          -->
<!ELEMENT tsb    - o      (%ptext;)*             -- Stub field              -->
<!ATTLIST tsb    rb       NUMBER  #IMPLIED       -- Start row               --
                 re       NUMBER  #IMPLIED       -- End row                 --
                 al       (L | R | C | D | E) "L"
                                                 -- Text alignment          -->
<!ELEMENT row    - o      EMPTY                  -- Table row               -->
<!ELEMENT cel    - o      ((%ptext;) | p)*       -- Table cell              -->
<!ATTLIST cel    rb       NUMBER  #IMPLIED       -- Start row               --
                 re       NUMBER  #IMPLIED       -- End row                 --
                 cb       NUMBER  #IMPLIED       -- Start column            --
                 ce       NUMBER  #IMPLIED       -- End column              --
                 al       (L | R | C | D | E) "R"-- Text alignment          --
                 rotation NUMBER  #IMPLIED       -- Rotation of cell contents-->
<!--                                                                        -->
<!-- ******************** BIOLOGICAL SEQUENCES   ******************         -->
<!-- This  section forseen for later use (PATENTIN)                        -->
<!--                                                                        -->
<!ELEMENT bioseq - o      EMPTY
                                                 -- (Stub for later expans.) -->
<!ATTLIST bioseq n        NUMBER  #IMPLIED       -- Reference number        -->
<!--                                                                        -->
<!-- ******************** MATHEMATICAL ENTITIES  ******************         -->
<!--                                                                        -->
<!ENTITY % elem "plex|sum|integral|product|sqrt|root|square|power|fence|
                 vec|matrix|pile|tensor|frac|sup|sub"
                                                 -- Constructs              -->
<!ENTITY % layout "mark|markref|break|box|middle|ov|roman|italic"
                                                 -- Layout see %hil;        -->
<!ENTITY % formel "(%elem;)|(%layout;)|#PCDATA"
                                                 -- Formula elements        -->
<!ENTITY % fencty "paren|bracket|brace|bar|angbrack|solidus|none"
                                                 -- Kinds of fence          -->
<!--                                                                        -->
<!-- ******************** MATHEMATICAL MAIN ELEMENTS ***************        -->
<!-- The following element allows for alternate math markup schemes.       -->
<!-- NOTATION AAP  SYSTEM " "                                              -->
<!NOTATION EQN  SYSTEM " "  >
<!NOTATION GML  SYSTEM " "  >
<!NOTATION TeX  SYSTEM " "  >
```

```
<!NOTATION WP   SYSTEM " "  >
<!NOTATION Word SYSTEM " "  >
<!ELEMENT altmath - -     CDATA                  -- Alternate math markup    -->
<!-- ATTLIST altmath system NOTATION (AAP|EQN|GML|TeX|WP|Word)
                                                   Alternate markup systems -->
<!--                                                                        -->
<!-- The following elements, etc. are ISO/TR 9573 based and recommended     -->
<!--                                                                        -->
<!ELEMENT f      - -      (%formel;)+  -(br|matrix|pile|frac|mark|markref)
                                                -- In-line formula          -->
<!ELEMENT df     - -      (%formel;)+  -(br)     -- Display formula         -->
<!ATTLIST df     align    (%align;) "centre"     -- Alignment               --
                 num      CDATA   #IMPLIED       -- Display formula number  --
                 id       ID      #IMPLIED       -- Display formula id      -->
<!ELEMENT dfg    - -      (df+)                  -- Display formula group   -->
<!ATTLIST dfg    align    (%align;) "centre"     -- Alignment               --
                 num      CDATA   #IMPLIED       -- Display formula group num--
                 id       ID      #IMPLIED       -- Display formula group id -->
<!ELEMENT dfref  - o      EMPTY                  -- Formula reference       -->
<!ATTLIST dfref  refid    IDREF   #REQUIRED      -- Formula id              --
                 page     (yes|no)  "yes"        -- page reference          -->
<!ELEMENT sup    - -      (%formel;)+            -- Superscript             -->
<!ELEMENT sub    - -      (%formel;)+            -- Subscript               -->
<!ATTLIST (sup|sub) pos   (PRE|MID|POST) "POST"  -- Position (default post)  -->
<!ELEMENT frac   - -      ((%formel;)+, over)    -- Fraction numerator      -->
<!ATTLIST frac   align    (%align;) "centre"     -- Fraction alignment      -->
<!ELEMENT over   - o      ((%formel;)+)          -- Fraction denominator    -->
<!--                                                                        -->
<!-- ******************** CONSTRUCTS WITH 'FROM' 'TO' 'OF' *********       -->
<!--                                                                        -->
<!ELEMENT plex   - -      (operator,(from?&to?)?,of?)
                                                -- Generalized operator     -->
<!ELEMENT operator o o    (#PCDATA)              -- Operator symbol         -->
<!ELEMENT from   - o      (%formel;)+            -- Start index for operator -->
<!ELEMENT to     - o      (%formel;)+            -- End index for operator  -->
<!ELEMENT of     - o      (%formel;)+            -- Formula operated upon   -->
<!ELEMENT sum    - -      ((from?&to?)?,of?)     -- Summation               -->
<!ELEMENT integral - -    ((from?&to?)?,of?)     -- Integral                -->
<!ELEMENT product - -     ((from?&to?)?,of?)     -- Product                 -->
<!--                                                                        -->
<!-- ******************** ROOTS AND POWERS       ******************        -->
<!--                                                                        -->
<!ELEMENT sqrt   - -      (%formel;)+            -- Square root             -->
<!ELEMENT root   - -      ((%formel;)+,of)       -- Root: degree/of         -->
<!ELEMENT square - -      (%formel;)+            -- Square                  -->
<!ELEMENT power  - -      ((%formel;)+,of)       -- Power: degree/of        -->
<!--                                                                        -->
<!-- ******************** FENCES AND HIGHLIGHTS  ******************        -->
<!--                                                                        -->
<!ELEMENT fence  - -      (%formel;)+            -- Brackets,parentheses etc.-->
<!ATTLIST fence  type     (%fencty;) "paren"     -- Fence kind code         --
                 style    (%style;)  "single"    -- Style of fence          --
                 open     CDATA   #IMPLIED       -- Special open  char      --
                 close    CDATA   #IMPLIED       -- Special close char      -->
<!--                                                                        -->
<!-- ******************** VECTORS, MATRICES, PILES *****************        -->
<!--                                                                        -->
<!ELEMENT vec    - -      (%formel;)+            -- Designates vector name  -->
<!ELEMENT matrix - -      (col+)                 -- Matrix is a set of cols. -->
<!ELEMENT col    - -      ((%formel;)+,above+)   -- Top element, above+     -->
<!ATTLIST col             align (%align;) "centre"
                                                -- Column alignment        -->
<!ELEMENT pile   - -      ((%formel;)+,above+)   -- Top element, above+     -->
<!ATTLIST pile   spc      (NORM | CLOSE) "NORM"  -- Spacing                 --
                 align    (%align;) "centre"     -- Alignment               -->
<!ELEMENT above  - o      ((%formel;)+)          -- Lower layers            -->
<!--                                                                        -->
<!-- ******************** LAYOUT ORIENTED CODING   *****************        -->
<!--                                                                        -->
<!ELEMENT mark   - o      EMPTY                  -- Mark for alignment      -->
<!ATTLIST mark   id       ID      #REQUIRED      -- Reference id for the mark-->
<!ELEMENT markref - o     EMPTY                  -- Reference to a mark     -->
<!ATTLIST markref refid   IDREF   #REQUIRED      -- Id of the mark referred  -->
<!ELEMENT break  - o      EMPTY                  -- Break point in formula  -->
<!ATTLIST break  type (required|optional) "required"
```

```
                                                -- type of break            -->
<!ELEMENT box    - -      (%formel;)+           -- Box around a formula     -->
<!ELEMENT roman  - -      (%formel;)+  -(roman)  -- Roman                    -->
<!ELEMENT italic - -      (%formel;)+  -(italic) -- Italic                   -->
<!ELEMENT middle - -      (#PCDATA)             -- Middle of a space        -->
<!ATTLIST (box|middle) style (%style;) "single"  -- Line styles             -->
<!ELEMENT ov     - -      (%formel;)+           -- 'Over' embellishment     -->
<!ATTLIST ov     pos      (above|below|mid) "above"
                                                -- position of 'over' emb.  --
                 type     (%type;)   "bar"      -- type of a line or mark   --
                 style    (%style;)  "single"   -- style of a line or mark  -->
<!ELEMENT tensor - -      (%formel;)+           -- tensors                  -->
<!ATTLIST tensor posf     (sub|sup)  "sup"      -- position of the suffix   --
                 suffix   CDATA   #REQUIRED     -- value of the first suffix-->
<!--                                                                        -->
<!-- ******************** BIBLIOGRAPHY SUB-DOCUMENT ***************         -->
<!--                                                                        -->
<!ELEMENT sdobi  - o      (B000?,B100,B200?,B300?,B400?,B500?,B600?,
                           B700?,B800?,B900?) +(bchg|echg)
>
<!ELEMENT bchg   - o      EMPTY                 -- Begin change             -->
<!ATTLIST bchg   date     NUMBER  #REQUIRED     -- Date of change           --
                 status   CDATA   #REQUIRED     -- Status of change        -->
<!ELEMENT echg   - o      EMPTY                 -- End change               -->
<!--                                                                        -->
<!-- ******************** SYSTEM/FILE INFORMATION *****************         -->
<!--                                                                        -->
<!ELEMENT B000   - o      (eptags?,ustags?,jptags?,xxtags?)
>
<!-- The following tags are for the specific use of the EPO -              -->
<!-- they are inserted as an example and may be changed at the             -->
<!-- discretion of the EPO.                                                -->
<!ELEMENT eptags - o
                          (B001EP?,B002EP?,B003EP?,B004EP?,B005EP?,
                           B006EP?,B010EP?,B020EP?,B021EP?,B030EP?,
                           B050EP?,B053EP*,B060EP?,B061EP?,B070EP?,B078EP?)
>
<!ELEMENT B001EP - o      (#PCDATA)             -- Select. mask for states
                                                      involved              -->
<!ELEMENT B002EP - o      (#PCDATA)             -- Reserved                 -->
<!ELEMENT B003EP - o      (#PCDATA)             -- Indicator 'no A-doc pub.
                                                      by EPO'               -->
<!ELEMENT B004EP - o      (#PCDATA)             -- Re-establishments of
                                                   rights indicator         -->
<!ELEMENT B005EP - o      (#PCDATA)             -- Printer id.              -->
<!ELEMENT B006EP - o      (#PCDATA)             -- Ind. for inter. applic.  -->
<!ELEMENT B010EP - o      (B011EP)+             -- Other rights and legal
                                                   means of execution       -->
<!ELEMENT B011EP - o      (date,dnum,ctry*)     -- Serial number date and
                                                   states                   -->
<!ELEMENT B020EP - -      CDATA                 -- Biblio rec. creation     -->
<!ELEMENT B021EP - -      CDATA                 -- Biblio. rec. correction  -->
<!ELEMENT B030EP - -      CDATA                 -- Legal status data        -->
<!ELEMENT B050EP - o      (B051EP,B052EP)+      -- Free text data           -->
<!ELEMENT B051EP - o      (#PCDATA)             -- Language                 -->
<!ELEMENT B052EP - o      (#PCDATA)             -- Free text                -->
<!ELEMENT B053EP - o      (#PCDATA)             -- Remarks                  -->
<!ELEMENT B060EP - -      CDATA                 -- Check data               -->
<!ELEMENT B061EP - -      CDATA                 -- Data relating to fees    -->
<!ELEMENT B070EP - o      (#PCDATA)             -- B pub. technical field   -->
<!ELEMENT B078EP - o      (DATE)                -- Date of 'no oppo. filed' -->
<!--                                                                        -->
<!ELEMENT ustags - o      EMPTY
>
<!ELEMENT jptags - o      EMPTY
>
<!--                      Element for other offices                         -->
<!ELEMENT xxtags - o      EMPTY
>
<!--                                                                        -->
<!-- ******************** DOCUMENT IDENTIFICATION *****************         -->
<!-- ******************** B100 IS REQUIRED WITHIN SDOBI ************         -->
<!--                                                                        -->
<!ELEMENT B100   - o      (B110,B120?,B130,B131EP?,B140,B190,B195?)
>
```

```
<!ELEMENT B110   - o      (#PCDATA)              -- Doc. number REQUIRED     -->
<!--                                                                        -->
<!ELEMENT B120   - o      (B121,B121EP?)         -- Plain lang. designation  -->
<!ELEMENT B121   - o      (#PCDATA)              -- Plain lang. designation  -->
<!ELEMENT B121EP - o      (#PCDATA)              -- Descrip. text for
                                                    B121 (EPO)              -->
<!--                                                                        -->
<!ELEMENT B130   - o      (#PCDATA)              -- Doc. kind (ST.16)
                                                                 REQUIRED -->
<!ELEMENT B131EP - o      (#PCDATA)              -- Ext. kind of
                                                    doc. code (EPO)         -->
<!ELEMENT B140   - o      (date)                 -- Doc. date (publication
                                                    or issue) REQUIRED      -->
<!ELEMENT B190   - o      (#PCDATA)              -- Publishing country or org.
                                                    (ST.3)  REQUIRED        -->
<!ELEMENT B195   - o      (#PCDATA)              -- Source furnishing record -->
<!--                                                                        -->
<!-- ******************** DOMESTIC FILING DATA    ******************        -->
<!--                                                                        -->
<!ELEMENT B200   - o      (B210,B210EP?,B220,B225?,B230?,B240?,
                           B250?,B250EP?,B251EP?,B260?)
>
<!ELEMENT B210   - o      (#PCDATA)              -- Application number       -->
<!ELEMENT B210EP - o      (#PCDATA)              -- Application number in
                                                   unstandardised form (EPO) -->
<!ELEMENT B220   - o      (date)                 -- Application filing date  -->
<!ELEMENT B225   - o      (dnum, date?, %party;) -- Receiving office data    -->
<!--                                                                        -->
<!ELEMENT B230   - o      (B231?,B232?,B233?,B234?,B235?,
                           B236?,B237?,B238EP?,B238?,B239?)
>
<!--                      Other dates                                       -->
<!ELEMENT B231   - o      (date)                 -- Exhibition filie         -->
<!ELEMENT B232   - o      (date)                 -- Complete spec. fil. date -->
<!ELEMENT B233   - o      (date)                 -- Receipt date nat. office -->
<!ELEMENT B234   - o      (date)                 -- Receipt date nat. office -->
<!ELEMENT B235   - o      (date)                 -- Date of refusalplication -->
<!ELEMENT B236   - o      (date)                 -- Date of withdra appl.    -->
<!ELEMENT B237   - o      (date)                 -- Date appl.  withdrawn    -->
<!ELEMENT B238EP - o      (date)                 -- Date of receiptquest for
                                                    re-establisment of rights-->
<!ELEMENT B238   - o      (date)                 -- Date appl. reest.        -->
<!ELEMENT B239   - o      (date)                 -- Date of revocation       -->
<!--                                                                        -->
<!ELEMENT B240   - o      (B241?,B242?,B243?,B244?,B245?,B245EP?,B246?,B248?)
>
<!--                      Effective dates for property rights               -->
<!ELEMENT B241   - o      (date)                 -- Date of request for exam.-->
<!ELEMENT B242   - o      (date)                 -- Date of despatch of 1st.
                                                          exam. report  -->
<!ELEMENT B243   - o      (date)                 -- Date pat. maint. as
                                                             amended  -->
<!ELEMENT B244   - o      (date,ctry+)           -- Request for conversion
                                                       to natl. appl.  -->
<!ELEMENT B245   - o      (date)                 -- Suspension/interruption
                                                        of proceedings -->
<!ELEMENT B245EP - o      (#PCDATA)              -- Suspension/interruption
                                                          indicator  -->
<!ELEMENT B246   - o      (date)                 -- Date of resumption of
                                                          proceedings  -->
<!ELEMENT B248   - o      (date)                 -- Date of notification
                                                       rights after appeal-->
<!--                                                                        -->
<!ELEMENT B250   - o      (#PCDATA)              -- Language of original
                                                         filing (ISO 639)  -->
<!ELEMENT B250EP - o      (#PCDATA)              -- Admissable non-EPO
                                                       language (EPO)  -->
<!ELEMENT B251EP - o      (#PCDATA)              -- Procedure language (EPO) -->
<!ELEMENT B260   - o      (#PCDATA)              -- Language of application
                                                        publ.  ISO 639 -->
<!--                                                                        -->
<!-- ******************** FOREIGN PRIORITY DATA   ******************        -->
<!--                                                                        -->
<!ELEMENT B300   - o      ((B310,B310EP?,B320,B330,B340?)*,(B345?,B345EP?)*)
>
```

```
<!ELEMENT B310   - o      (#PCDATA)              -- Priority appli. number   -->
<!ELEMENT B310EP - o      (#PCDATA)              -- Priority appli. number in
                                                    unstandardised form (EPO)-->
<!ELEMENT B320   - o      (date)                 -- Fil. date of prio. app.  -->
<!ELEMENT B330   - o      (ctry)                 -- Publ. ctry or org. (ST.3)-->
<!ELEMENT B340   - o      (ctry)                 -- Paris Union ctry (ST.3)  -->
<!ELEMENT B345   - o      (%doc;)                -- Patent family info.      -->
<!ELEMENT B345EP - o      (%doc;)                -- INPADOC pat.family
                                                              info. (EPO)-->
<!--                                                                        -->
<!-- ******************** PUBLIC AVAILABILITY DATES AND TERM OF PROTECTION * -->
<!--                                                                        -->
<!ELEMENT B400   - o      (B405?,(B410?,B420?,B430?,B440?,
                          B450?,B460?,B470?),B451EP?,B472?,B476?,B477?)
>
<!ELEMENT B405   - o      (%doc;)                -- Pat. bull./gaz. info.    -->
<!ELEMENT B410   - o      (%doc;)                -- Unexam. not printed doc.
                                                    without grant           -->
<!ELEMENT B420   - o      (%doc;)                -- Examined not printed
                                                    document without grant  -->
<!ELEMENT B430   - o      (%doc;)                -- Unexamined printed document
                                                    without grant           -->
<!ELEMENT B440   - o      (%doc;)                -- Examined printed document
                                                    without grant           -->
<!ELEMENT B450   - o      (%doc;)                -- Printed document with
                                                    grant (USPat)           -->
<!ELEMENT B451EP - o      (date)                 -- Date of announc. (EPO)   -->
<!ELEMENT B460   - o      (%doc;)                -- Doc. claims only avail.  -->
<!ELEMENT B470   - o      (%doc;)                -- Not printed document
                                                    with grant              -->
<!ELEMENT B472   - o      (B473?,B474?,B475?)    -- Term of grant            -->
<!ELEMENT B473   - o      (date)                 -- Disclaimer date          -->
<!ELEMENT B474   - o      (#PCDATA)              -- Term of grant            -->
<!ELEMENT B475   - o      (%doc;)+               -- Lapse of patent          -->
<!ELEMENT B476   - o      (%doc;)                -- Invalidation of patent   -->
<!ELEMENT B477   - o      (%doc;)                -- Document printed as amended,
                                                                            -->
<!--                                                                        -->
<!-- ******************** TECHNICAL INFORMATION   ******************        -->
<!--                                                                        -->
<!ELEMENT B500   - o      (B510?,B520*,B530?,B540?,B550?,
                          B560?,B570?,B580?,B590?)
>
<!--                                                                        -->
<!-- ******************** IPC DATA                ******************        -->
<!--                                                                        -->
<!ELEMENT B510   - o      (B516?,B511,(B512|B513|B514|B515)*,B517EP?)
>
<!--                      International Patent Classification               -->
<!ELEMENT B516   - o      (#PCDATA)              -- Edition, version of IPC  -->
<!ELEMENT B511   - o      (#PCDATA)              -- Main classification      -->
<!ELEMENT B512   - o      (#PCDATA)              -- Further classification   -->
<!ELEMENT B513   - o      (#PCDATA)              -- Additional information   -->
<!ELEMENT B514   - o      (#PCDATA)              -- Linked indexing code     -->
<!ELEMENT B515   - o      (#PCDATA)              -- Unlinked indexing code   -->
<!ELEMENT B517EP - o      (#PCDATA)              -- Non-obligatory suppl.
                                                    class. (EPO)            -->
<!--                                                                        -->
<!-- ******************** NATIONAL CLASSIFICATION DATA *************        -->
<!--                                                                        -->
<!ELEMENT B520   - o      (B527,B526?,B521,(B522|B523|B524|B525|B528US)*)
>
<!--                      Domestic or National classification               -->
<!ELEMENT B521   - o      (#PCDATA)              -- Main classification      -->
<!ELEMENT B522   - o      (#PCDATA)              -- Further classification   -->
<!ELEMENT B523   - o      (#PCDATA)              -- Additional information   -->
<!ELEMENT B524   - o      (#PCDATA)              -- Linked indexing code     -->
<!ELEMENT B525   - o      (#PCDATA)              -- Unlinked indexing code   -->
<!ELEMENT B526   - o      (#PCDATA)              -- Edition, version         -->
<!ELEMENT B527   - o      (#PCDATA)              -- Country code (ST.3)      -->
<!ELEMENT B528US - o      (#PCDATA)              -- Digest reference         -->
<!--                                                                        -->
<!-- ************************************************************         -->
<!--                                                                        -->
<!ELEMENT B530   - o      (#PCDATA)              -- Universal Dec. Class.    -->
```

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<!--                                                                    -->
<!ELEMENT B540   - o      (B541?,B542)+          -- Title                  -->
<!ELEMENT B541   - o      (#PCDATA)              -- Lang. of title (ISO 639) -->
<!ELEMENT B542   - o      (#PCDATA)              -- Title of invention      -->
<!--                                                                    -->
<!ELEMENT B550   - o      (B551?,B552*)*         -- Keywords and descriptors -->
<!ELEMENT B551   - o      (#PCDATA)              -- Lang. of keywords
                                                    and descriptors -->
<!ELEMENT B552   - o      (#PCDATA)              -- Keywords and descriptors -->
<!--                                                                    -->
<!-- ******************** CITATION, SEARCH REPORT DATA *************    -->
<!--                                                                    -->
<!ELEMENT B560   - o      ((B561,B563?,B564*)*,(B562,B563?,B564*)*,
                            B561EP?,B565?,B565EP?,
                            B566?,B566EP?,B567?,B568?,B569?)
                                    -- Citations and mini-search report  -->
<!--                                                                    -->
<!-- ****** If the SEARCH REPORT is a separate sub-document use the     -->
<!--         tags below within the SDOSR tag - see below  ********      -->
<!--                                                                    -->
<!ELEMENT B561   - o      (#PCDATA|((%pcit;),rel*))
                                           -- Patent doc. citation     -->
<!ELEMENT B561EP - o      (#PCDATA)              -- Number of copies of
                                                    citations (EPO)    -->
<!ELEMENT B562   - o      (#PCDATA|(%ncit;))     -- Non-patent doc. citation -->
<!ELEMENT B563   - o      (#PCDATA)              -- Category of cited doc
                                                    office dependent   -->
<!ELEMENT B564   - o      (#PCDATA)              -- Claim to which cited
                                                    doc is relevant    -->
<!ELEMENT B565   - o      (date)                 -- Date of completion of
                                                    search report      -->
<!ELEMENT B565EP - o      (date)                 -- Date of drawing up
                                                    suppl.search report (EPO)-->
<!ELEMENT B566   - o      (date)                 -- Date of mailing of
                                                    search report      -->
<!ELEMENT B566EP - o      (date)                 -- Date of despatch of
                                                    correction to search
                                                    report (EPO)       -->
<!ELEMENT B567   - o      (%party;)              -- Place of search,
                                                    intl. search authority  -->
<!ELEMENT B568   - o      (%doc;)                -- Publ. of ser. report    -->
<!ELEMENT B569   - o      (%nam;)                -- Search report examiner  -->
<!--                                                                    -->
<!-- ******************** ABSTRACT  & CLAIMS DATA ******************    -->
<!--                                                                    -->
<!ELEMENT B570   - o      (B571?,B572?,B575*,B576?,B577,B578US*)
                                           -- Abstract or claim        -->
<!ELEMENT B571   - o      (#PCDATA)              -- Lang. of abstr.(ISO 639) -->
<!ELEMENT B572   - o      (%doc;)                -- Abstract doc. info.     -->
<!ELEMENT B575   - o      (#PCDATA)              -- Lang. of claims (ISO 639)-->
<!ELEMENT B576   - o      (%doc;)                -- Claims doc. info.       -->
<!ELEMENT B577   - o      (#PCDATA)              -- Number of claims        -->
<!ELEMENT B578US - o      (#PCDATA)              -- Exemplary claim number  -->
<!--                                                                    -->
<!-- ********************************************************************    -->
<!--                                                                    -->
<!ELEMENT B580   - o      ((B581|B582|B583US|B584US)*)
                                           -- Field of search          -->
<!ELEMENT B581   - o      (#PCDATA)              -- IPC                     -->
<!ELEMENT B582   - o      (#PCDATA)              -- National classification  -->
<!ELEMENT B583US - o      (#PCDATA)              -- Field of mechan. search  -->
<!ELEMENT B584US - o      (#PCDATA)              -- Other field of search   -->
<!--                                                                    -->
<!ELEMENT B590   - o      (B591?,B592?,B595?,B596?,B597?,B598*)
                                           -- Spec. & drawings        -->
<!ELEMENT B591   - o      (#PCDATA)              -- Lang. of spec.  ISO 639  -->
<!ELEMENT B592   - o      (#PCDATA)              -- Number of text pages    -->
<!ELEMENT B595   - o      (#PCDATA)              -- Number of drawing sheets -->
<!ELEMENT B596   - o      (#PCDATA)              -- Number of figures       -->
<!ELEMENT B597   - o      (#PCDATA)              -- No. of attached
                                                    image files        -->
<!ELEMENT B598   - o      (#PCDATA)              -- Figure number on
                                                    first (title) page     -->
<!--                                                                    -->
<!-- ******************** RELATED PATENTS OR APPLICATIONS **********    -->
```

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<!--                                                                    -->
<!ELEMENT B600   - o      ((B610|B620|B620EP|B630|B640|
                           B645|B650|B655|B660|B665|B670)*)
>
<!--               Information about a document which is a parent through:  -->
<!ELEMENT B610   - o      (parent)               -- Earlier doc. to which
                                                       this is an addition  -->
<!ELEMENT B620   - o      (parent)               -- Earlier application from
                                                    which the present doc.
                                                    has been divided out     -->
<!--                                                                    -->
<!ELEMENT B620EP - o      (parent|B621EP|B622EP)
                                 -- Other types of relationship (EPO)      -->
<!ELEMENT B621EP - o      (%doc;)                -- Relation for app.no.(EPO)-->
<!ELEMENT B622EP - o      (%doc;)                -- Relation for pub.no.(EPO)-->
<!ELEMENT B630   - o      (B631|B632|B633)       -- Continuations            -->
<!ELEMENT B631   - o      (parent)               -- Continuation             -->
<!ELEMENT B632   - o      (parent)               -- Continuation-in-part     -->
<!ELEMENT B633   - o      (parent)               -- Continuing reissue       -->
<!--                                                                    -->
<!ELEMENT B640   - o      (parent)               -- Reissue                  -->
<!ELEMENT B645   - o      (parent)               -- Reexamination            -->
<!ELEMENT B650   - o      (parent)               -- Same application         -->
<!ELEMENT B655   - o      (parent)               -- Document previously
                                                    published by another
                                                    country/organisation     -->
<!ELEMENT B660   - o      (parent)               -- Substitution             -->
<!ELEMENT B665   - o      (B666,B667,B668?)      -- Pat. correction info.    -->
<!ELEMENT B666   - o      (%doc;)                -- Document being corrected -->
<!ELEMENT B667   - o      (#PCDATA)              -- Type of correction       -->
<!ELEMENT B668   - o      (#PCDATA)              -- Descriptive text
                                                    relating to correction   -->
<!ELEMENT B670   - o      (parent)               -- Basis of utility model   -->
<!--                                                                    -->
<!ELEMENT parent o o      (dnum?,cdoc*,pdoc?,psta?,ppub?)
>
<!--      dnum                                     document number          -->
<!ELEMENT cdoc   - o      (%doc;)+               -- child  doc. id.          -->
<!ELEMENT pdoc   - o      (%doc;)+               -- parent doc. id.          -->
<!ELEMENT psta   - o      (#PCDATA)              -- parent status code       -->
<!ELEMENT ppub   - o      (%doc;)                -- id of patent
                                                    associated with parent   -->
<!--                                                                    -->
<!-- ******************** PARTIES CONCERNED WITH THE DOCUMENT ******         -->
<!--                                                                    -->
<!ELEMENT B700   - o      (B710?,B720?,B730?,B740?,B745?,B780?,B790?)
>
<!--                                                                    -->
<!-- ******************** APPLICANTS              ********************         -->
<!--                                                                    -->
<!ELEMENT B710   - o      (B711,B712US?)+        -- Applicant information    -->
<!ELEMENT B711   - o      (%party;,B711EP?,B713EP?,(B716EP?,B717EP?,B718EP?)*)
                                                 -- Applicant name and add.  -->
<!ELEMENT B711EP - o      (%party;)              -- Applicant name and add. for
                                                    for correspondence (EPO) -->
<!ELEMENT B713EP - o      (#PCDATA)              -- Applicant authorisation
                                                        no. Art.133(3) (EPO) -->
<!ELEMENT B712US - o      EMPTY                  -- Rule 47 indicator        -->
<!ELEMENT B716EP - o      (ctry)+                -- Des. Contr. States
                                                    for applicant (EPO)      -->
<!ELEMENT B717EP - o      (ctry)+                -- Des. extension states
                                                    for applicant (EPO)      -->
<!ELEMENT B718EP - o      (date)                 -- Effective date for
                                                    transfer of rights (EPO) -->
<!--                                                                    -->
<!-- ******************** INVENTORS              ********************         -->
<!--                                                                    -->
<!ELEMENT B720   - o      (B721+)                -- Inventor information     -->
<!ELEMENT B721   - o      (%party;,B724EP?,B725EP?,B726EP?,
                           B727EP?,B728EP?,B729EP?)
                                                 -- Inventor name and addr.  -->
<!ELEMENT B724EP - o      (#PCDATA)              -- Waiver by the inventor of
                                                    information pursuant
                                                    to Rule 17(3), EPC (EPO) -->
<!ELEMENT B725EP - o      (#PCDATA)              -- The inventor has agreed
```

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                                                    to waive his entitlement
                                                    to designation (EPO)     -->
<!ELEMENT B726EP - o      (#PCDATA)              -- Origin of applicant's
                                                    rights if not inventor:
                                                    as employee (EPO)        -->
<!ELEMENT B727EP - o      (#PCDATA)              -- Origin of applicant's
                                                    rights if not inventor:
                                                    under agreement (EPO)    -->
<!ELEMENT B728EP - o      (#PCDATA)              -- Origin of applicant's
                                                    rights if not inventor:
                                                    as co-inventor  (EPO)    -->
<!ELEMENT B729EP - o      (#PCDATA)              -- Origin of applicant's
                                                    rights if not inventor: as
                                                    successor in title (EPO) -->
<!--                                                                         -->
<!-- ******************** GRANTEES               ******************          -->
<!--                                                                         -->
<!ELEMENT B730   - o      (B731,B732US?)+        -- Grantee information      -->
<!ELEMENT B731   - o      (%party;,(B736EP?,B737EP?,B738EP?)*)
                                                 -- Grantee name and address -->
<!ELEMENT B732US - o      (#PCDATA)              -- Assignee type code       -->
<!ELEMENT B736EP - o      (ctry)+                -- Designated states for
                                                    grantee (EPO)            -->
<!ELEMENT B737EP - o      (ctry)+                -- Designated extension
                                                    states for grantee (EPO) -->
<!ELEMENT B738EP - o      (date)                 -- Effective date for
                                                    transfer of rights (EPO) -->
<!--                                                                         -->
<!-- ******************** REPRESENTATIVES        ******************          -->
<!--                                                                         -->
<!ELEMENT B740   - o      (B741+)                -- Attorney, agent,
                                                    representative info.     -->
<!ELEMENT B741   - o      (%party;,B742EP?)      -- Attorney name and addr.  -->
<!ELEMENT B742EP - o      (#PCDATA)              -- General author. no.(EPO) -->
<!--                                                                         -->
<!-- ********************************************************************** -->
<!--                                                                         -->
<!ELEMENT B745   - o      (B746,B747*,B748US?)   -- Persons acting
                                                    upon the document        -->
<!ELEMENT B746   - o      (%nam;)                -- Primary examiner name    -->
<!ELEMENT B747   - o      (%nam;)                -- Assistant examiner name  -->
<!ELEMENT B748US - o      (#PCDATA)              -- Art group/unit  (USPTO)  -->
<!--                                                                         -->
<!-- ******************** OPPOSITION  DATA       ******************          -->
<!--                                                                         -->
<!ELEMENT B780   - o      ((B781)*,(B787|B788|B789)?)
                                                 -- Opposition data          -->
<!ELEMENT B781   - o      ((dnum,date,kind),(%party;),B784?,
                          (B785|B786)?)          -- Opponent data            -->
<!ELEMENT B784   - o      (%party;)              -- Attorney or agent info.  -->
<!ELEMENT B785   - o      (date)                 -- Oppo. deemed not
                                                    to have been filed       -->
<!ELEMENT B786   - o      (date)                 -- Opposition inadmissable  -->
<!ELEMENT B787   - o      (date)                 -- Date of reject. of oppo. -->
<!ELEMENT B788   - o      (date)                 -- Date of term. of oppo.   -->
<!ELEMENT B789   - o      (#PCDATA)              -- No opposition filed      -->
<!--                                                                         -->
<!-- ******************** LICENCE DATA           ******************          -->
<!--                                                                         -->
<!ELEMENT B790   - o      (B791)*                -- Licensee data            -->
<!ELEMENT B791   - o      ((dnum,date,kind?),(%party;),(B794?,B796?))
                                                 -- Licence data,
                                                          name and address -->
<!ELEMENT B794   - o      (%party;)              -- Attorney or agent info.  -->
<!ELEMENT B796   - o      (ctry)+                -- Design. ctry for license -->
<!--                                                                         -->
<!-- ******************** DATA RELATED TO INTERNATIONAL CONVENTIONS *        -->
<!--                                                                         -->
<!ELEMENT B800   - o      (B810?,B820?,B830?,B840?,B844EP?,B850?,B860?,B870?,
                           B880?,B890?)+
>
<!ELEMENT B810   - o      (ctry)+                -- Designated states - PCT  -->
<!ELEMENT B820   - o      (ctry)+                -- PCT elected states       -->
<!ELEMENT B830   - o      (B831,B832?,B833?)     -- Micro. deposit info.     -->
<!ELEMENT B831   - o      (#PCDATA)              -- Deposit file number      -->
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<!ELEMENT B832   - o      (#PCDATA)              -- Authority where
                                                    deposit was made         -->
<!ELEMENT B833   - o      (date)                 -- Date of deposit          -->
<!--                                                                         -->
<!ELEMENT B840   - o      (ctry)+                -- Design. contract. states -->
<!ELEMENT B844EP - o      (B845EP)+              -- States to which the patent
                                                    is extended (EPO)        -->
<!ELEMENT B845EP - o      (ctry,date?,B846EP?)   -- Extended state data (EPO)-->
<!ELEMENT B846EP - o      (date)                 -- End date (withdrawal)    -->

<!ELEMENT B850   - o      (date)                 -- Date PCT Art. 22/39 fulf. -->
<!--                                                                         -->
<!ELEMENT B860   - o      (B861,B862?,B863?,B864?)
                                                 -- PCT or reg. filing info. -->
<!ELEMENT B861   - o      (%doc;)                -- Document identification  -->
<!ELEMENT B862   - o      (#PCDATA)              -- Filing language (ISO 639)-->
<!ELEMENT B863   - o      (date)                 -- PCT section 371 date     -->
<!ELEMENT B864   - o      (date)                 -- PCT section 102(e) date  -->
<!--                                                                         -->
<!ELEMENT B870   - o      (B871,B872?)           -- PCT or region. publ.info.-->
<!ELEMENT B871   - o      (%doc;)                -- Document identification  -->
<!ELEMENT B872   - o      (#PCDATA)              -- PCT pub. lang. (ISO 639) -->
<!--                                                                         -->
<!ELEMENT B880   - o      (%doc;)                -- Deferred publ. of s.rep. -->
<!--                                                                         -->
<!ELEMENT B890   - o      (B891,B892?)           -- CMEA agreement           -->
<!ELEMENT B891   - o      (%doc;)                -- Havana Agreement doc.id. -->
<!ELEMENT B892   - o      (date)                 -- Havana Agreement date
                                                    property rights          -->
<!--                                                                         -->
<!ELEMENT B900   - o      (B910?)                -- Miscellaneous            -->
<!ELEMENT B910   - o      (date)                 -- Date PCT application
                                                    no longer has effect     -->
<!--                                                                         -->
<!-- ******************** TAGS USED IN COMMON BY SEVERAL ELEMENTS ***        -->
<!--                                                                         -->
<!ELEMENT cit    - o      (#PCDATA,((%pcit;)|(%ncit;)),rel*)*
>
<!ELEMENT rel    - o      (#PCDATA)              -- Identifies relevant
                                                    spot in citation         -->
<!--                                                                         -->
<!-- Components of a patent document citation (PCIT)                        -->
<!-- RECOMMENDED: use <CIT> as start and end tag when citations are         -->
<!-- within the body of the patent, ie. within <P>- as opposed to in <SDOSR> -->
<!--                                                                         -->
<!-- extdoc                          Citation identification:               -->
<!--                                 must include doc. number <DNUM>        -->
<!-- nam                             Citation applicant or patentee         -->
<!ELEMENT pic    - o      (#PCDATA)              -- IPC of citation          -->
<!ELEMENT pnc    - o      (#PCDATA)              -- National class. of cit.  -->
<!--      rel                        Relevant passage, defined above        -->
<!--                                                                         -->
<!-- Components of a non-patent citation (NCIT)                             -->
<!--                                                                         -->
<!ELEMENT artcit - o      ((%authgrp;)?,atl?,sbt?,(jnl|cng|bookid),
                            pp?,issn?,cdn?)
>
<!--                                 Article information                    -->
<!--      authgrp                    Author group, defined below            -->
<!--                                                                         -->
<!ELEMENT atl    - o      (#PCDATA)              -- Article title            -->
<!ELEMENT sbt    - o      (#PCDATA)              -- Article subtitle         -->
<!--                                                                         -->
<!ELEMENT jnl    - o      (jtl,sbt?,jabt?,pnm?,date,vid?,ino?,ano?)
>
<!--                                 Journal reference                      -->
<!ELEMENT jtl    - o      (#PCDATA)              -- Journal title            -->
<!--      sbt                        Subtitle, defined previously           -->
<!ELEMENT jabt   - o      (#PCDATA)              -- Journal abbreviated title-->
<!--      pnm                        Publisher's name (defined under Bookid)-->
<!--      date                       Publication date                       -->
<!ELEMENT vid    - o      (#PCDATA)              -- Volume identification    -->
<!ELEMENT ino    - o      (#PCDATA)              -- Journal issue number     -->
<!ELEMENT ano    - o      (#PCDATA)              -- Abstract number          -->
<!--                                                                         -->
```

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<!ELEMENT pp     - o      (#PCDATA|(ppf,ppl?))   -- Page numbers             -->
<!ELEMENT ppf    - o      (#PCDATA)              -- First page number        -->
<!ELEMENT ppl    - o      (#PCDATA)              -- Last page number         -->
<!--                                                                        -->
<!ELEMENT issn   - o      (#PCDATA)              -- ISSN                     -->
<!ELEMENT cdn    - o      (#PCDATA)              -- International coden      -->
<!--                                                                        -->
<!--   CONFERENCE GROUP / CITATION                                          -->
<!ELEMENT cng    - o      (cnm,date?,cnn?,cnp?,cns?)
>
<!--                                Conference Proceedings                  -->
<!ELEMENT cnm    - o      (#PCDATA)              -- Conference name          -->
<!--      date                      Conference date                         -->
<!ELEMENT cnn    - o      (#PCDATA)              -- Conference number        -->
<!ELEMENT cnp    - o      (#PCDATA)              -- Conference place         -->
<!ELEMENT cns    - o      (#PCDATA)              -- Conference sponsor       -->
<!--                                                                        -->
<!--   BOOK CITATION                                                        -->
<!ELEMENT bookcit - o     (%authgrp;,bookid,part?,sect?,pp?)
                                                -- book info.               -->
<!--      authgrp                   Author group, defined below             -->
<!--      bookid                    Book identification group, see below    -->
<!ELEMENT part   - o      (#PCDATA)              -- Part of book             -->
<!ELEMENT sect   - o      (#PCDATA)              -- Section of book          -->
<!--      pp                        Page numbers, defined above             -->
<!--      rel                       Relevant passage, defined above         -->
<!--                                                                        -->
<!ELEMENT bookid - o      (ti,sbt?,edn?,msn?,mst?,ano?,pnm?,date,vid?,
                           no?,ed?,isbn?,cdn?)  -- book identification      -->
<!ELEMENT ti     - o      (#PCDATA)              -- Title                    -->
<!--      sbt                                      Subtitle (defined
                                                   under journal)           -->
<!ELEMENT edn    - o      (%party;)              -- Editor's name and address-->
<!ELEMENT msn    - o      (#PCDATA)              -- Monographic series number-->
<!ELEMENT mst    - o      (#PCDATA)              -- Monographic series title -->
<!--      ano              Abstract number, defined above                   -->
<!ELEMENT pnm    - o      (%party;)              -- Publisher's name and add.-->
<!--      date                                     Publication date         -->
<!--      vid                                      Vol. id., defined above  -->
<!ELEMENT no     - o      (#PCDATA)              -- Book number              -->
<!ELEMENT ed     - o      (#PCDATA)              -- Edition statement        -->
<!ELEMENT isbn   - o      (#PCDATA)              -- ISBN                     -->
<!--      cdn                                      Inter. coden,
                                                   defined above            -->
<!--                                                                        -->
<!ELEMENT dbasecit - o    (dbn,pnm?,dbs?,srt?,date?)
>
<!--                                Database information group              -->
<!ELEMENT dbn    - o      (#PCDATA)              -- Name of database         -->
<!--      pnm                       Database publisher or service           -->
<!ELEMENT dbs    - o      (#PCDATA)              -- Section of database      -->
<!ELEMENT srt    - o      (#PCDATA)              -- Search terms             -->
<!--      date                      Publication date                        -->
<!--                                                                        -->
<!ELEMENT othcit - o      (#PCDATA)              -- Other reference
                                                   (paragraph form)         -->
<!--                                                                        -->
<!--                      Components of the author group (AUTHGRP)          -->
<!ELEMENT author - o      (%party;)              -- Author name and address  -->
<!ELEMENT coauth - o      (%party;)              -- Co-author's name and add.-->
<!ELEMENT collab - o      (%party;)              -- Collaborator's
                                                   name and address         -->
<!--                                                                        -->
<!--                      Components of a name (nam)                        -->
<!--                                                                        -->
<!ELEMENT ttl    - o      (#PCDATA)              -- Title (e.g., Mr., Mrs.)  -->
<!ELEMENT fnm    - o      (#PCDATA)              -- Given and middle name(s)
                                                                or initials -->
<!ELEMENT snm    - o      (#PCDATA)              -- Family, last, surname or
                                                   organisation             -->
<!ELEMENT syn    - o      (#PCDATA)              -- Synonym, cross reference -->
<!ELEMENT sfx    - o      (#PCDATA)              -- Suffix (e.g., II, Jr.,
                                                   Esq. et al.)             -->
<!ELEMENT iid    - o      (#PCDATA)              -- Individual ID number
                                                   (e.g., US SSSN)          -->
```

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<!ELEMENT irf    - o      (#PCDATA)              -- Individual ref.
                                                   number(filing, etc.)     -->
<!ELEMENT onm    - o      (#PCDATA)              -- Organization name        -->
<!ELEMENT oid    - o      (#PCDATA)              -- Identifying no. of org.  -->
<!ELEMENT odv    - o      (#PCDATA)              -- Division of organization -->
<!ELEMENT did    - o      (#PCDATA)              -- Identifying no. of div.  -->
<!--                                                                        -->
<!--                      Components of an address                          -->
<!--                                                                        -->
<!ELEMENT adr    o o      ((%nam;)?,omc?,pbox?,str*,city?,
                          cnty?,state?,(ctry?&pcode?),(ead*&tel*&fax*))
>
<!--      nam             Organization name, if part of address             -->
<!ELEMENT omc    - o      (#PCDATA)              -- Organization mail code   -->
<!ELEMENT pbox   - o      (#PCDATA)              -- Post Office box number   -->
<!ELEMENT str    - o      (#PCDATA)              -- Str., house no. or name, -->
<!--                                 district of city, apt number, etc.     -->
<!ELEMENT city   - o      (#PCDATA)              -- City or town             -->
<!ELEMENT cnty   - o      (#PCDATA)              -- County, parish,
                                                     department, etc. -->
<!ELEMENT state  - o      (#PCDATA)              -- Region of country
                                                     (state, province) -->
<!ELEMENT ctry   - o      (#PCDATA)              -- Country (ST.3)           -->
<!ELEMENT pcode  - o      (#PCDATA)              -- Postal code or zip code  -->
<!ELEMENT ead    - o      (#PCDATA)              -- Electronic address
                                                   (e.g., email)            -->
<!ELEMENT tel    - o      (#PCDATA)              -- Telephone number         -->
<!ELEMENT fax    - o      (#PCDATA)              -- Fax telephone number     -->
<!--                                                                        -->
<!--                      Components of party (party)                       -->
<!--      nam                        Name of person or organisation         -->
<!--      adr                        Address                                -->
<!ELEMENT dtxt   - o      (#PCDATA)              -- Descriptive text         -->
<!ELEMENT rctry  - o      (ctry)                 -- Country of residence     -->
<!ELEMENT nctry  - o      (ctry)                 -- Country of nationality   -->
<!--                      Components of a date (date)                       -->
<!ELEMENT date   - o      (#PCDATA,time?)        -- YYYYMMDD                 -->
<!ELEMENT time   - o      (#PCDATA)              -- HHMMSS (UCT)             -->
<!--                      Components of a doc and extdoc (doc, extdoc)      -->
<!ELEMENT dnum   - o      (#PCDATA,(anum?&pnum?))-- Document number          -->
<!ELEMENT anum   - o      (#PCDATA)              -- Application number       -->
<!ELEMENT pnum   - o      (#PCDATA)              -- Publication number       -->
<!--      date                       Document date                          -->
<!--      ctry                       Publishing country, organisation       -->
<!ELEMENT kind   - o      (#PCDATA)              -- Document kind (ST.16),
                                                   kind generally           -->
<!ELEMENT bnum   - o      (#PCDATA)              -- Bulletin number          -->
<!--      dtxt                       Descriptive text                       -->
<!--                                                                        -->
<!-- ******************** SEARCH REPORT SUBDOCUMENT *****************       -->
<!--                                                                        -->
<!ELEMENT sdosr  - o      ((B510?,B520?,B560?,B580?)|(emi)+)
>
<!--                      Search report must or may contain:                -->
<!-- B510                           IPC                                    -->
<!-- B520                           National classification                -->
<!-- B561                           Patent citation                        -->
<!-- B562                           Non-patent citation                    -->
<!--             ** B561 and/or B562 are required if B560 present          -->
<!-- B563                           Category of cited document             -->
<!-- B564                           Claims to which relevant               -->
<!-- B561EP                         Number of copies of citation (EPO)     -->
<!-- B565                           Date of search                         -->
<!-- B565EP                         Date of draw. up and despatch (EPO)    -->
<!-- B566                           Date of mailing search report          -->
<!-- B566EP                         Date of despatch of corr. to S.R. (EPO)-->
<!-- B567                           Patent office carrying out search      -->
<!-- B568                           Publication of search report           -->
<!-- B569                           Search report examiner                 -->
<!-- B580                           Field of search IPC                    -->
<!-- cit                            Citation - optional                    -->
<!-- THE ABOVE TAGS TO BE USED - OR THE SEARCH REPORT AS AN EMI       -->
]
>
```

ANNEX C: PATENT CHARACTER ENTITY REFERENCES (NON-ISO)

The following character entity references are referenced in the DTD above. This is a non-exhaustive list of entity references which may appear in patent documents - many more are possible, and, for data exchange, must be declared to receiving offices. The entity references below, plus the ISO entity references, allow all characters contained in WIPO Standard ST.31 to be included in a patent document instance.

<!-- (C) Special characters in Patent Information not in ISO. Permission to copy in any form is granted for use with conforming SGML systems and applications as defined in ISO 8879, provided this notice is included in all copies. -->
<!-- Character entity set. Naming and reference to this file may be system dependent. Typical invocation:

<!ENTITY % PATSPEC SYSTEM "patspent.ent">
%PATSPEC;-->

```
<!ENTITY anq       SDATA "[anq      ]" --Approx. but not actually equal to   -->
<!ENTITY dlowbar   SDATA "[dlowbar  ]" --Double underscore                   -->
<!ENTITY Ehac      SDATA "[Ehac     ]" --Equals with hacek;  equiangular     -->
<!ENTITY guilder   SDATA "[guilder  ]" --Dutch guilder                       -->
<!ENTITY iis       SDATA "[iis      ]" --Includes in set                     -->
<!ENTITY iss       SDATA "[iss      ]" --Included in set                     -->
<!ENTITY ldurule   SDATA "[ldurule  ]" --Left - and +45 degree rule          -->
<!ENTITY lhdurule  SDATA "[lhdurule ]" --Left horizontal,- & +45 degree rule -->
<!ENTITY litre     SDATA "[litre    ]" --Litre                               -->
<!ENTITY lint      SDATA "[lint     ]" --Lower integral                      -->
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<!ENTITY lsqbstr   SDATA "[lsqbstr  ]" --Left square bracket, stroke         -->
<!ENTITY min       SDATA "[min      ]" --Minutes                             -->
<!ENTITY ngtneq    SDATA "[ngtneq   ]" --Neither greater than nor equiv. to  -->
<!ENTITY ngtnlt    SDATA "[ngtnlt   ]" --Neither greater than nor less than  -->
<!ENTITY nltneq    SDATA "[nltneq   ]" --Neither less than nor equivalent to -->
<!ENTITY nltngt    SDATA "[nltngt   ]" --Neither less than not greater than  -->
<!ENTITY omicron   SDATA "[omicron  ]" --Small omicron Greek                 -->
<!ENTITY Ovbar     SDATA "[Ovbar    ]" --Double overscore                    -->
<!ENTITY parl      SDATA "[parl     ]" --Parallelogram                       -->
<!ENTITY peseta    SDATA "[peseta   ]" --Peseta                              -->
<!ENTITY rdurule   SDATA "[rdurule  ]" --Right - and +45 degree rule         -->
<!ENTITY rhdurule  SDATA "[rhdurule ]" --Right horizontal,- & +45 degree rule-->
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<!ENTITY rsqbstr   SDATA "[rsqbstr  ]" --Right square bracket, stroke        -->
<!ENTITY sbplus    SDATA "[subplus  ]" --Subscript plus                      -->
<!ENTITY sec       SDATA "[sec      ]" --Seconds                             -->
<!ENTITY sinew     SDATA "[sinew    ]" --Sinus wave                          -->
<!ENTITY sl0       SDATA "[sl0      ]" --Slash zero                          -->
<!ENTITY squslash  SDATA "[squslash ]" --Square slash,  cancelled box        -->
<!ENTITY sub0      SDATA "[sub0     ]" --Subscript 0                         -->
<!ENTITY sub1      SDATA "[sub1     ]" --Subscript 1                         -->
<!ENTITY sub2      SDATA "[sub2     ]" --Subscript 2                         -->
<!ENTITY sub3      SDATA "[sub3     ]" --Subscript 3                         -->
<!ENTITY sub4      SDATA "[sub4     ]" --Subscript 4                         -->
<!ENTITY sub5      SDATA "[sub5     ]" --Subscript 5                         -->
<!ENTITY sub6      SDATA "[sub6     ]" --Subscript 6                         -->
<!ENTITY sub7      SDATA "[sub7     ]" --Subscript 7                         -->
<!ENTITY sub8      SDATA "[sub8     ]" --Subscript 8                         -->
<!ENTITY sub9      SDATA "[sub9     ]" --Subscript 9                         -->
<!ENTITY submin    SDATA "[submin   ]" --Subscript minus                     -->
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<!ENTITY sup4      SDATA "[sup4     ]" --Superscript 4                       -->
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<!ENTITY sup6      SDATA "[sup6     ]" --Superscript 6                       -->
<!ENTITY sup7      SDATA "[sup7     ]" --Superscript 7                       -->
<!ENTITY sup8      SDATA "[sup8     ]" --Superscript 8                       -->
<!ENTITY sup9      SDATA "[sup9     ]" --Superscript 9                       -->
<!ENTITY supa      SDATA "[supa     ]" --Superscript a                       -->
<!ENTITY supand    SDATA "[supand   ]" --Superscript AND                     -->
<!ENTITY supcomma  SDATA "[supcomma ]" --Superscript comma                   -->
<!ENTITY supmin    SDATA "[supmin   ]" --Superscript minus                   -->
<!ENTITY spplus    SDATA "[supplus  ]" --Superscript plus                    -->
<!ENTITY uint      SDATA "[uint     ]" --Upper integral                      -->
```

ANNEX D: EXAMPLE PATENT DOCUMENT AND SGML MARKUP

EXAMPLE OF A PATENT MARKED UP WITH SGML TAGS

The example which follows is a non-existent EPO patent which has been put together to show a variety of SGML markup which would not normally be found in one patent. In many cases the text is taken from actual patents, for example: the front page (title page). Even though it is a non-existent patent it generally follows EPO practice in regard to markup. However, the example should not necessarily be taken as representing EPO practice. The example document instance below conforms with the DTD in Annex B.

In reading this example please note that:

* The original page, or a made-up example, is placed on the left page (verso) and the marked up text is placed on the right page (recto). The 'original' text is that which might typically come into a patent office from an applicant or his representative. The pages shown below reflect draft recommendations under test by the EPO, and user groups, for application page layout. They should not be taken as official EPO recommendations. (Rules governing page layout, submission, etc. are covered in the European Patent Convention).

* All marked up data is commonly based on the ORIGINAL application, it may be reformatted later, in any way required by a patent office, based on a style sheet for 'house style', layout, etc. In the example below this re-formatting is shown for the title page and search report only (since the original data, in the EPO, was submitted on an application form and then input to a database with some data added - this would be difficult to show here). Thus the title page shown was generated from the SGML markup, this is also the case for the search report page, whereas for all other pages the SGML markup is added to the original text.

* The markup references image data which, in the EPO, is scanned and indexed according to WIPO ST.33. These are not included as external entities linked to the example markup.

* Notes on the markup are placed in square brackets and in italic or are in the text itself.

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European Patent Office
Office européen des brevets

(11) Numéro de publication: **0 500 000 A1**

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AT BE DE DK ES GB IT LU NL PT SE

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CH-2001 Neuchâtel(CH)

(54) Elément de commande formant souris.

(57) L'invention concerne un élément de commande formant souris, destiné à être associé à un ensemble de visualisation d'un curseur. Cet élément de commande comporte :

- un boîtier (2);
- une sphère mobile (4) faisant saillie à l'extérieur du boîtier (2) pour être actionnée par un utilisateur;
- un dispositif de support (6) conformé pour recevoir ladite sphère mobile (4), ce dispositif de support (6) comportant au moins trois paliers (8) qui sont décalés angulairement et qui comprennent des pièces de contact (22) en un matériau à faible coefficient de frottement, sur lesquels repose ladite sphère mobile (4), cet élément de commande étant caractérisé en ce que les pièces de contact (22) coopèrent avec ladite sphère (4) par l'intermédiaire d'un frottement de roulement.

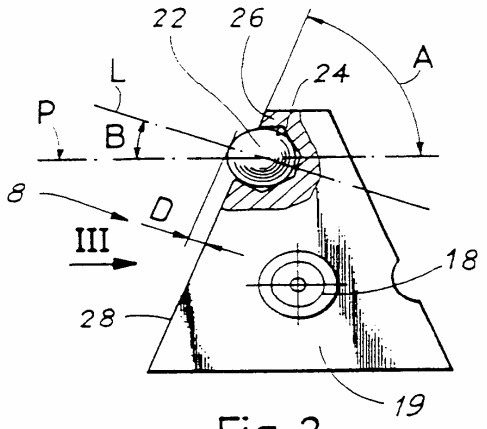


Fig. 2

EP 0 500 000 A1

Rank Xerox (UK) Business Services

<PATDOC>	*[Start of Patent document]*
<SDOBI LA=FR>	*[Start sub-document bibliography in French]*
<B100><B110>0500000	*[Publication number]*
<B120><B121>DEMANDE DE BREVET EUROPEEN	*[Plain language designation]*
<B130>A1	*[Publication kind]*
<B140><DATE>19920826	*[Publication date]*
<B190>EP</B100>	*[Publishing country, organisation. Note how this tag, in combination with an EPO style sheet, generates the EPO logo and names]*
<B200><B210>92102108.5	*[Application number]*
<B220><DATE>19920208</B200>	*[Application filing date]*
<B300><B310>432/91<B320><DATE>19910212	*[Priority number, date, country]*
<B330<CTRY>CH<B310> 9101995	
<B320><DATE>19910218<B330><CTRY>FR	
</B300>	
<B400><B430><DATE>19920826<BNUM>92/35	*[Date of publication of application, bulletin number]*
</B430></B400>	
<B500><B510><B511>G06K 11/18	*[IPC classification]*
<B512>G05G 9/053</B510>	
<B516>5	*[IPC edition]*
<B540><B541>FR	*[Title data, language of title]*
<B542>Elément de commande formant souris.</B540></B500>	*[Title]*
<B700>	*[Parties concerned with the document]*
<B710><B711><SNM>Comadur SA	*[Applicant data, name and address]*
<ADR><STR>Chemin des Tourelles 17	
<CITY> Le Locle<PCODE>CH-2400	
<CTRY>CH</ADR></B711></B710>	
<B720><B721><SNM>Wyss<FNM> Peter	*[Inventor data, name and address]*
<ADR><STR>von May-Strasse 4	
<CITY>Thun<PCODE>CH-3600	
<CTRY>CH</ADR></B721></B720>	
<B740><B741><SNM>de Raemy<FNM>Jacques<SFX>et al	*[Representative data, name and address]*
<ADR><ONM>ICB Ingénieurs Conseils en Brevets SA	
<STR>Passage Max. Meuron 6	
<CITY>Neuchâtel<PCODE>CH-2001	
<CTRY>CH</ADR></B741></B740></B700>	
<B800><B840><CTRY>AT BE DE DK ES GB IT LU NL PT SE</B840></B800>	*[Designated contracting states. Note: these may be tagged individually using <CTRY> within <B840>]*
</SDOBI>	*[End of bibliographic data]*

[The text above was originally filed by the applicant using an application form (in the case of the EPO - form 1001), it was then input into a database system containing other data such as financial data, at publication time relevant publication data is extracted from the database and converted to the format above].

ABRÉGÉ

L'invention concerne un élément de commande formant souris, destiné à être associé à un ensemble de visualisation d'un curseur. Cet élément de commande comporte :

- un boîtier **(2)**;
- une sphère mobile **(4)** faisant saillie à l'extérieur du boîtier **(2)** pour être actionnée par un utilisateur;
- un dispositif de support **(6)** conformé pour recevoir ladite sphère mobile **(4)**, ce dispositif de support **(6)** comportant au moins trois paliers **(8)** qui sont décalés angulairement et qui comprennent des pièces de contact **(22)** en un matériau à faible coefficient de frottement, sur lesquels repose ladite sphère mobile **(4)**, cet élément de commande étant caractérisé en ce que les pièces de contact **(22)** coopèrent avec ladite sphère **(4)** par l'intermédiaire d'un frottement de roulement.

<DP N=1> [Document page "DP", number one - it is sometimes useful to mark the original page for quality control and checking purposes. It can be discarded at publication time.]

<SDOAB LA=FR> [*Start of sub-document abstract in French, the heading [**ABRÉGÉ**] need not be captured since SDOAB is sufficient and is replaced, in any case, by INID code (57) on publication. The abstract, when printed, normally forms part of the title page, however when submitted it usually forms part of the application papers which are distinct from any official filing form (as in the EPO). Therefore, in this example, the abstract, as filed, is shown opposite, as well as on the printed title page earlier]*.

<P>L'invention concerne un élément de commande formant souris, destiné à être associé à un ensemble de visualisation d'un curseur. Cet élément de commande comporte :

<UL ST="-"> [*Start of unordered list using list item <LI> style of '-']*

<LI>un boîtier <B>(2)</B>; *[Figure reference points are marked as bold]*

<LI>une sphère mobile <B>(4)</B> faisant saillie à l'extérieur du boîtier <B>(2)</B> pour être actionnée par un utilisateur;

<LI>un dispositif de support <B>(6)</B> conformé pour recevoir ladite sphère mobile <B>(4)</B>, ce dispositif de support <B>(6)</B> comportant au moins trois paliers <B>(8)</B> qui sont décalés angulairement et qui comprennent des pièces de contact <B>(22)</B> en un matériau à faible coefficient de frottement, sur lesquels repose ladite sphère mobile <B>(4)</B>, cet élément de commande étant caractérisé en ce que les pièces de contact <B>(22)</B> coopèrent avec ladite sphère <B>(4)</B> par l'intermédiaire d'un frottement de roulement.

</UL> [*End of unordered list*]

<EMI FILE=921021085 ID='0.1' HE=85 WI=75 IMF=ST33 TI=AD> *[EMI = EMbedded Image and here it references the abstract drawing: 'Fig. 2', which is extracted from the drawings pages, scaled down and re-referenced as EMI ID =' 0.1'.; the height (HE) and width (WI) are calculated and it is re-classified as an abstract drawing (TI=AD). The actual image is held as a separate, external, file which is 'called in' at the time of processing, In the case of the EPO all images are scanned and indexed according to WIPO ST.33]*

</SDOAB> [*End of abstract sub-document*]

DESCRIPTION
Thermal imaging apparatus

1. The present invention relates to thermal imaging apparatus generally and more particularly to thermal imaging apparatus employing non-linear scanning.

BACKGROUND OF THE INVENTION

2. Various types of thermal imaging devices are known in the art. These include:

    * parallel scan devices and
    * serial scan devices.

    Serial scan devices which employ a plurality of detectors arranged in a linear array and interconnected to provide time delay and integration are described in the Laakmann Patent, Israel Patent 39,389.

3. There is described in the article: Elliott, C.T., et al. *An Integrating Detector for Serial Scan Thermal Imaging*. Infrared Physics, 1982, vol 22, p31 - 42, the use of a Mercury Cadmium Telluride **"SPRITE"** detector for thermal imaging.

4. However, with the above second prior-art example, the measurement operation is difficult to automate and requires many hands. The first prior-art example allows automation of the measurement to be easily effected. On the other hand, it involves the following problems:

    (1) Due to scattering and deterioration in the profile irregularity at the edge portions of the knife edges for splitting the two interference rays of light, noise is included in the beat signals.

    (2) Any displacement of the set positions of the knife edges for splitting the two interference rays of light affect the measurement accuracy.

<DP N=2>
<SDODE LA=EN>*[Start of sub-document "SDO" , description "DE", the language "LA" is English ". This tag may be used to generate the heading "Description". Normally, of course, there would not be a language mixture - French title page, English description, etc.]*

<H LVL=0>Thermal imaging apparatus</H> *[This is header level zero indicating the title of the patent; this may be discarded if the title is also present at group tag <B540>]*

<P N=1>The present invention relates to thermal imaging apparatus generally and more

[Start of paragraph one of the description. Note that the new concept of PARAGRAPH NUMBERING by the applicant is encouraged]

particularly to thermal imaging apparatus employing non-linear scanning.

<H LVL=1>BACKGROUND OF THE INVENTION</H>

<P N=2>Various types of thermal imaging devices are known in the art. These include:

<UL ST="*"> *[Start of an unordered list with '*' as the markers]*

<LI>parallel scan devices and<LI>serial scan devices.</UL>

Serial scan devices which employ a plurality of detectors arranged in a linear array and interconnected to provide time delay and integration are described in the <U>Laakmann Patent</U>, Israel Patent 39,389.

<P N=3>There is described in the article: <ARTCIT><AUTHOR><SNM>Elliott,<FNM> C.T., <SFX>et al. <ATL>An Integrating Detector for Serial Scan Thermal Imaging.<JNL><JTL> Infrared Physics, <DATE>1982<VID> vol 22</JNL><PP> p31 - 42,</ARTCIT>

[Above we have an article citation, here it is marked up using specific tags for periodical citations (normally used for bibliographic (title page) and search report citations, however, this has markup cost (data entry) implications.]

the use of a Mercury Cadmium Telluride <B>"SPRITE"</B> detector for thermal imaging.

<P N=4>However, with the above second prior-art example, the measurement operation is difficult to automate and requires many hands. The first prior-art example allows automation

of the measurement to be easily effected. On the other hand, it involves the following problems:

<SL> *[Start of a simple list; in EP patents ordered lists are used only in Claims]*

<LI>(1) Due to scattering and deterioration in the profile irregularity at the edge portions of the knife edges for splitting the two interference rays of light, noise is included in the beat signals.

<LI>(2) Any displacement of the set positions of the knife edges for splitting the two interference rays of light affect the measurement accuracy.</SL>

SUMMARY OF THE INVENTION

5. It is the object of the present invention to overcome the deficiencies in the prior art.

6. The preferred composition of the steel of which the facing layer is formed is:-

Chromium	11.5 to 13.5% by weight,
Nickel	less than 1.5% by weight,
Molybdenum	less than 0.6% by weight.

7. A specific type of steel which may be used for the production of the facing layer is that in accordance with British Standard No. 416 S21 which has a composition as follows:-

Chromium	11.5 to 13.5% by weight,
Carbon	0.09 to 0.15% by weight,
Nickel	not more than 1.0% by weight,
Molybdenum	not more than 0.6% by weight,
Manganese	not more than 1.5% by weight,
Silicon	not more than 1.0% by weight,

8. PROVIDED THAT at least one of R^a, R^b and R^c represents an unprotected group; and, if required, the following steps, in any order:

a. removing any protecting group, to give a compound of formula (I), and,
b. if required, converting any group represented by R^1, R^2 or R^3 to any other group so represented, and,
c. if required, converting a compound where R^4 represents a hydrogen atom and R^5 represents a cyano group to a compound where R^4 represents a cyano group and R^5 represents a hydrogen atom, or vice versa.

<DP N=3>
<H LVL=1><U>SUMMARY OF THE INVENTION</U></H>
<P N=5>It is the object of the present invention to overcome the deficiencies in the prior art.
<P N=6>The preferred composition of the steel of which the facing layer is formed is:-
<DL TSIZE=12> *[Start of a definition list]*
<DT>Chromium<DD>11.5 to 13.5% by weight, *[Definition term followed by definition description - strictly speaking this is NOT a definition list but the structure of the data is similar]*.
<DT>Nickel<DD>less than 1.5% by weight,
<DT>Molybdenum<DD>less than 0.6% by weight.
</DL> *[End of a definition list]*
<P N=7>A specific type of steel which may be used for the production of the facing layer is that in accordance with British Standard No. 416 S21 which has a composition as follows:-
<DL TSIZE=12>
<DT><B>Chromium</B><DD>11.5 to 13.5% by weight,
<DT><B>Carbon</B><DD>0.09 to 0.15% by weight,
<DT><B>Nickel</B><DD>not more than 1.0% by weight,
<DT><B>Molybdenum</B><DD>not more than 0.6% by weight,
<DT><B>Manganese</B><DD>not more than 1.5% by weight,
<DT><B>Silicon</B><DD>not more than 1.0% by weight,
</DL>
<P N=8>PROVIDED THAT at least one of R<SP>a</SP>, R<SP>b</SP> and R<SP>c</SP> represents an unprotected group;
 [Forced line break]
and, if required, the following steps, in any order:
<SL> *[Start of a simple list; in EP patents ordered lists are used only in Claims]*
<LI>a. removing any protecting group, to give a compound of formula (I), and,
<LI>b. if required, converting any group represented by R¹, R² or R³ to any
[Here we have superscript character entity references, <SP> could also be used] represented, and,
<LI>c. if required, converting a compound where R&sup4; represents a hydrogen atom and R&sup5; represents a cyano group to a compound where R&sup4; represents a cyano group
and R&sup5; represents a hydrogen atom, or <U>vice versa</U>.
</SL>

DETAILED DESCRIPTION OF THE INVENTION

9. To prepare the (+) enantiomer of the title compound, the reaction was run under the same conditions except that (+)-tramadol as the free base was used instead of the (-)-tramadol to yield 2.8 g of the (+) enantiomer of O-desmethyl tramadol (mp. 242-3°C)□25 = +32.2°
(C=1, EtOH).

D

10. Alternatively a route to compounds 1 where r > 1 is available by condensation of compounds of structure 4 with an amino biphenyl methyl amine such as 5[1] . 4 may be prepared by heating the amino pyrazine carboxylic acid with excess acid chloride or anhydride. The precursor 2 may be prepared by heating 4 with ammonium carbonate to give the 2-substituted-pyrazino[2,3-d]pyrimidinones 2

[1] Irwin, W. J.; Wibberley, D., J. A New Pteridine Synthesis. Tetrahedron Lett. 1972, 32, 3359-3360.

<DP N=4>
<H LVL=1><U>DETAILED DESCRIPTION OF THE INVENTION</U></H>
<P N=9>To prepare the (+) enantiomer of the title compound, the reaction was run under the same conditions except that (+)-tramadol as the free base was used instead of the (-)-tramadol to yield 2.8 g of the (+) enantiomer of O-desmethyl tramadol (mp. 242-3°C) α<CHF>25<CHFBR TYPE=NONE>D</CHF> = +32.2° (C=1, EtOH). *[Here we have an example of a character fraction construct with no bar]*
<P N=10>Alternatively a route to compounds <U>1</U> where r >1 is available by condensation of *[Above we use the character entity reference for greater than - > - since it is a closing delimiter in SGML syntax]* compounds of structure <U>4</U> with an amino biphenyl methyl amine such as <U>5</U>.¹. <FOO FN="4.1">¹Irwin, W. J.; Wibberley, D., J. A New Pteridine Synthesis. Tetrahedron Lett. 1972, 32, 3359-3360.</FOO>

[Here we have a footnote, referenced as "4.1"; for processing reasons it is placed at the point of occurence. Normally the style of the footnote reference, here superscript one, can be controlled by the publisher. This is not the case with EP patent documents where the style used by the applicant must be preserved. Note that this reference could also be marked up with tags for citations]

<U>4</U> may be prepared by heating the amino pyrazine carboxylic acid with excess acid chloride or anhydride. The precursor <U>2</U> may be prepared by heating <U>4</U> with ammonium carbonate to give the 2-substituted-pyrazino[2,3-d]pyrimidinones <U>2</U>.

11. Then the horizontal variation of □(x) is found to obey the equation:

$$\frac{d^2\phi(x)}{dx^2} - \frac{\phi(x)}{\lambda_{SOI}^2} = 0 \qquad (1)$$

It is in this respect that the natural length scale □ emerges. We have found that in order for an SOI device having an effective channel length L_{eff} to operate substantially free of short-channel effects such as punchthrough, the ratio $□_{SOI}/L_{eff}$ should be no more than about 0.1 - 0.2, although specific applications will dictate more precisely what ratio is small enough.

12. We have applied a similar theorerical analysis to a structure, the "ground plane" structure, which has different boundary conditions than the SOI structure. As discussed below, we have discovered not only that the ground plane structure is at least as effective as the SOI structure for reducing □, but also that it can be practically realized in bulk silicon.

13. The ground plane structure is depicted schematically in **FIG. 1**. As is apparent from the figure, a gate oxide layer 10 overlies a silicon layer 20. A portion of the silicon layer overlies a buried ground plane 30. Significantly (for purposes of this idealized picture), the lateral dimensions of the gate oxide, the channel, region 40, and the ground plane are assumed to be identical. The ground plane is considered to be maintained at a fixed potential, exemplarily ground potential.

14. We have found that such a structure has a natural length scale □, analogous to $□_{SOI}$, which is approximately given by:

$$\lambda = \sqrt{\frac{\epsilon_{Si}}{2\epsilon_{ox}} \frac{t_{Si} t_{ox}}{1 + \frac{\epsilon_{Si} t_{ox}}{\epsilon_{ox} t_{si}}}} \qquad (2)$$

<DP N=5>
<P N=11>Then the horizontal variation of Φ (x) is found to obey the equation:
<DF NUM="(1)"><FRAC>d²Φ (x)<OVER>dx²</FRAC> - <FRAC>Φ (x)<OVER>λ²_{SOI}</FRAC> = 0</DF>
<PC>It is in this respect that the natural length scale λ emerges. We have found that in order for an SOI device having an effective channel length L<SB>eff</SB> to operate substantially free of short-channel effects such as punchthrough, the ratio
λ<SB>SOI</SB>/L <SB>eff</SB> should be no more than about 0.1 - 0.2, although specific applications will dictate more precisely what ratio is small enough.
<P N=12>We have applied a similar theorerical analysis to a structure, the "ground plane" structure, which has different boundary conditions than the SOI structure. As discussed below, we have discovered not only that the ground plane structure is at least as effective as the SOI structure for reducing λ, but also that it can be practically realized in bulk silicon.
<P N=13>The ground plane structure is depicted schematically in <B>FIG. 1</B>. As is apparent from the figure, a gate oxide layer 10 overlies a silicon layer 20. A portion of the silicon layer overlies a buried ground plane 30. Significantly (for purposes of this idealized picture), the lateral dimensions of the gate oxide, the channel region 40, and the ground plane are assumed to be identical. The ground plane is considered to be maintained at a fixed potential, exemplarily ground potential.
<P N=14>We have found that such a structure has a natural length scale λ, analogous to λ<SB>SOI</SB>, which is approximately given by:
<DF NUM="(2)">
λ = <SQRT><FRAC>ε_{Si}<OVER>2ε_{ox}</FRAC>
<FRAC>t_{Si}t_{ox}<OVER>1 +
<FRAC>ε_{Si}t_{ox}<OVER>ε_{ox}t
_{Si}</FRAC></FRAC></SQRT></DF>

- 6 -

EXAMPLE TABLE

15. The pigment base was diluted by mixing (not grinding) with a much larger quantity of the opaque white bleach base, so as to eliminate any minor differences of gloss and hue. In each of these comparisons, 4g of a pigment grind base (formulated as shown above) were mixed with 4g of water and 32g of the above bleach base. The results are listed in Table I below.

TABLE I

Bleach Test[1]				
	J-678		GA-1	
	Density[2]	Gloss[3]	Density[2]	Gloss[3]
Yellow	0.66	60.2	0.66	63.1
Rubine	0.81	56.5	0.82	57.3
Blue	1.11	58.9	1.11	60.5
Black	0.95	68.7	0.95	67.1

1. Printed with #7 meyer bar on Printkote® Board.
2. Cosar Pressmate 102 Densitometer used.
3. Gloss Guard II Glossmeter, 60˜.

<DP N=6>
<H LVL=1>EXAMPLE TABLE</H>
<P N=15>The pigment base was diluted by mixing (not grinding) with a much larger quantity of the opaque white bleach base, so as to eliminate any minor differences of gloss and hue. In each of these comparisons, 4g of a pigment grind base (formulated as shown above) were mixed with 4g of water and 32g of the above bleach base. The results are listed in Table I below.
[Below we have a fairly simple table which also contains footnotes within the table]
<TAB CO=5 ID="Table I" CS="A S">
<ROW><TTI>Bleach Test<FOR FNREF='6.01'>¹</FOR>
<ROW><TCH CB=1>
<TCH CB=2 CE=3>J-678
<TCH CB=4 CE=5>GA-1
<ROW><TSH>
<TSH>Density<FOR FNREF='6.02'><SP>2</SP></FOR>
<TSH>Gloss<FOR FNREF='6.03'><SP>3</SP></FOR>
<TSH>Density<FOR FNREF='6.02'><SP>2</SP></FOR>
<TSH>Gloss<FOR FNREF='6.03'><SP>3</SP></FOR>
<ROW><TSB>Yellow<CEL AL=D>0.66<CEL AL=D>60.2<CEL AL=D>0.66<CEL AL=D>63.1
<ROW><TSB>Rubine<CEL AL=D>0.81<CEL AL=D>56.5<CEL AL=D>0.82<CEL AL=D>57.3
<ROW><TSB>Blue<CEL AL=D>1.11<CEL AL=D>58.9<CEL AL=D>1.11<CEL AL=D>60.5
<ROW><TSB>Black<CEL AL=D>0.95<CEL AL=D>68.7<CEL AL=D>0.95<CEL AL=D>67.1
<FOO FN='6.01'>1. Printed with #7 meyer bar on Printkote® Board.</FOO>
<FOO FN='6.02'>2. Cosar Pressmate 102 Densitometer used.</FOO>
<FOO FN='6.03'>3. Gloss Guard II Glossmeter, 60%°.</FOO>
</TAB>

EXAMPLE PAGES

16. The text above was taken, with some slight modifications, from published patents. The text and graphics in the pages following contain a variety of examples to show different constructs and character entity references. The base code page for the data is ASCII 437 (extended ASCII); all other characters must be translated into character entity references based on ISO public character entities (referenced in the DTD).

17. When wishing to preserve line endings
use the break line tag.

18. Here we have text in ***Bold italic and underlined***

19. Here we have text with an overscore:
$\overline{H^2O}$, □ (small beta), □ (subset, equals)

20. Here we have text with a double underscore:
X^2 Y_{x-y}, □ (Weierstrass)

21. Here we have various subscript and superscript constructs within a simple list:

FIG 1.: $x\text{-}y^{(a+b)}$, $X^{4,5,6,7}$ or
$X^{4,5,6,7}$

FIG 2.: $ABC_{x-y=n}$, 67□ (left arrow over right arrow)

FIG 3.: $X^{(abc)}{}_{(xyz)}$

<DP N=7>
<H LVL=1>EXAMPLE PAGES</H>
<P N=16>The text above was taken from published patents, with some slight modifications, the text and graphics in the pages following contain a variety of examples to show different constructs and character entity references. The base code page for the data is ASCII 437 (extended ASCII); all other characters must be translated into character entity references based on ISO public character entities (referenced in the DTD).
<P N=17>When wishing to preserve line endings
use the break line tag.
<P N=18>Here we have text in <B><I><U>Bold italic and underlined</U></I></B>
<P N=19>Here we have text with an overscore:
<O>H^2;O, β (small beta), ⊆ (subset, equals)</O>
<P N=20>Here we have text with a double underscore:
<U ST=D>X^2, Y<SB>x-y</SB>, ℘ (Weierstrass)</U>
<P N=21>Here we have various subscript and superscript constructs
within a simple list:
<SL>
<LI>FIG 1.: x-y<SP>(a+b)</SP>, X&sup4;,&sup5;,&sup6;,&sup7; or
X<SP>4,5,6,7</SP>
<LI>FIG 2.: <I>ABC<SB>x-y = n</SB></I>, 67<SB>&lrarr2;</SB> (left arrow over right arrow)
<LI>FIG 3.: X<SP>(abc)<SB>(xyz)</SP></SB>
</SL>

- 8 -

22. Here we have various lists and nested lists within a paragraph:

(1) **List item one**

(2) **List item two**

a) *sub list item a*
b) *sub list item b*

- An unordered list with 'bullets' - line one
- An unordered list with 'bullets' - line two
- An unordered list with 'bullets' - line three

c) *sub list item c*

(3) **List item three**

- An unordered list with 'dash' - line one
- An unordered list with 'dash' - line two
- An unordered list with 'dash' - line three

(4) **List item four**. This has a simple mathematical formula within the list:

$$n-1=\frac{2x + 3y^2}{11x - 11y_{ab}}$$

<DP N=8>
<P N=22>Here we have various lists and nested lists within a paragraph:
<SL>
<LI>(1) <B>List item one</B>
<LI>(2) <B>List item two</B>
<SL>
<LI>a) <I>sub list item a</I>
<LI>b) <I>sub list item b</I>
<UL ST="•">
<LI>An unordered list with 'bullets' - line one
<LI>An unordered list with 'bullets' - line two
<LI>An unordered list with 'bullets' - line three
</UL>
<LI>c) <I>sub list item c</I>
</SL>
<LI>(3) <B>List item three</B>
<UL ST="-">
<LI>An unordered list with 'dash' - <U>line one</U>
<LI>An unordered list with 'dash' - <U>line two</U>
<LI>An unordered list with 'dash' - <U>line three</U>
</UL>
<LI>(4) <B>List item four</B>. This has a simple mathematical
formula within the list:
<DF>n - 1 = <FRAC>2x + 3y²<OVER>11x - 11y_{ab}</FRAC></DF>

- 9 -

(5) **List item five**

23. Next we have a character for which there is no character code or character entity reference, therefore it must be scanned in as an unrecognised character (TI=FF) and be coded as an embedded image within the line:

The symbol ☺ represents happiness and is often used in computer graphics since ☺ exits as a special character in some font sets. Note the ☺ symbol can be used several times but scanned once only and referenced using the EMR tag. If the character is commonly occuring it can also be designated as a character entity reference.

24. Here we have a chemical formula:

$$2FeCl_2.FeCl_3.xH_2O$$

25. Here we have a chemical reaction:

$$BrCH=CH_2+NO_2Cl\square CHBrClCH_2NO_2$$

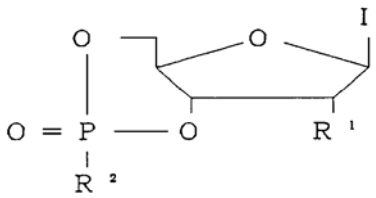
26. ~~Here we have an example of text which has been changed, eg. by the patent examiner, because it is incorrect.~~ Here we have an example of text which has been changed, eg. by the patent examiner, this is the correct text.

<DP N=9>
<LI>(5) <B>List item five</B>
</SL>
<P N=23>Next we have a character for which there is no character code or character entity reference, therefore it must be scanned in as an unrecognised character (TI=FF) and be coded as an embedded image within the line:
The symbol <EMI ID='9.1' HE=3 WI=3 TI=FF> represents happiness and is often used in computer graphics since <EMR ID='9.1'> exits as a special character in some font sets. Note the <EMR ID='9.1'> symbol can be used several times but scanned once only and referenced using the EMR tag. If the character is commonly occuring it can also be designated as a character entity reference.
<P N=24>Here we have a chemical formula:
<CHE>2FeCl<SB>2</SB>.FeCl<SB>3</SB>.xH<SB>2</SB>O</CHE>
<P N=25>Here we have a chemical reaction:
<CHR>BrCH=CH<SB>2</SB>+NO<SB>2</SB>Cl→CHBrClCH<SB>2</SB>NO<SB>2
</SB> </CHR>
<P N=26><CHG DATE= 19950606 STATUS='ORIGINAL STRUCK OUT'>Here we have an example of text which has been changed, eg. by the patent examiner, because it is incorrect.</CHG><CHG DATE=19950606 STATUS=AMENDED> Here we have an example of text which has been changed, eg. by the patent examiner, this is the correct text.</CHG>

- 10 -

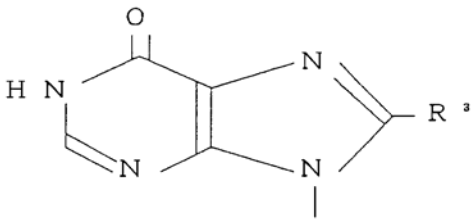
CLAIMS

1. A compound of the following general formula [I]



[I]

(wherein I represents



R^1; represents hydrogen, hydroxy, acyloxy or alkoxy; R^2 represents alkyl; and R^3; represents hydrogen, halogen, hydroxy or alkyl.

2. A compound according to claim 1, which compound is optically pure.

<DP N=10>

<SDOCL LA=E> *[Start of sub-document Claims. In the EPO Claims must be numbered in one style only. Therefore ordered lists are used and on processing <LI>s become standard arabic numerals. Note that paragraph numbering would normally not be used for claims since each claim is numbered.]*

<OL>

<LI>A compound of the following general formula [I]

<EMI ID='10.1' HE=38 WI=85 LX=583 LY=528 TI=CF>

[Here we have an embedded image within the text since there is, at the moment, no coding for chemical structures. The image is scanned and stored in CCITT Group 4 format. The application number and the EMI ID act as a unique reference to the image. Indexing is according to WIPO ST.33 where the image parameters should be the same as in the EMI tag above.]

(wherein I represents

<EMI ID='10.2' HE=42 WI=105 LX=627 LY=1202 TI=CF>

R<SP>1</SP> represents hydrogen, hydroxy, acyloxy or alkoxy; R<SP>2</SP> represents alkyl; and R<SP>3</SP> represents hydrogen, halogen, hydroxy or alkyl.

<LI>A compound according to claim 1, which compound is optically pure.

</OL>

</SDOCL>

[DRAWINGS]

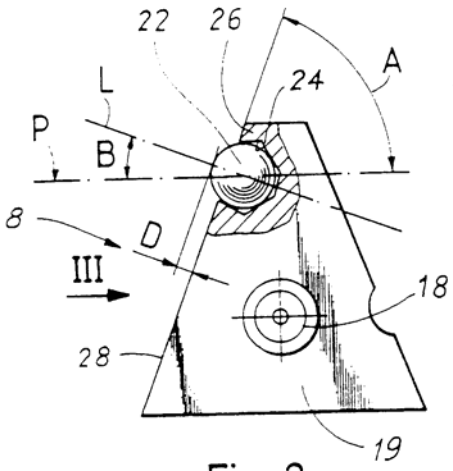


Fig. 2

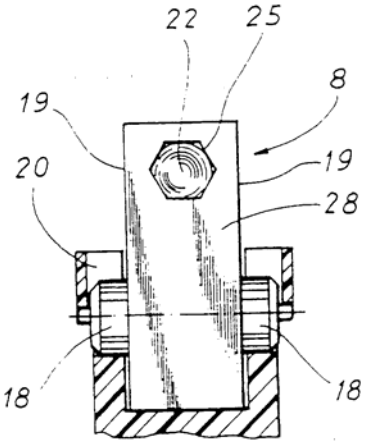


Fig. 3

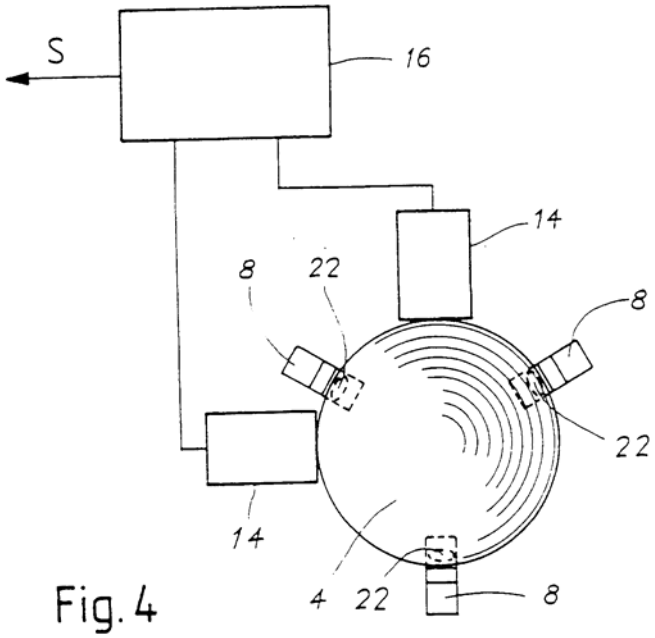


Fig. 4

<DP N=11>
<SDODR LA=E> *[Start of sub-document Drawings. Note that the page of drawings consists of more than one figure. They have been scanned as one image - this is an office dependent decision; there are advantages and disadvantages to this approach - as opposed to scanning and indexing each individual drawing. In this example figure number two is extracted, re-scaled and used as the abstract drawing on the title page].*

<EMI ID='11.1' HE=224 WI=157 LX=254 LY=430 TI=DR>
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Office européen des brevets

RAPPORT DE RECHERCHE EUROPEENNE

Numero de la demande

EP 92 10 2108

DOCUMENTS CONSIDERES COMME PERTINENTS

Categorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendication concernée	CLASSEMENT DE LA DEMANDE (Int. Cl.5)
A	US-A-4 562 347 (D.A. HOVEY ET AL.) * colonne 2, ligne 53 - colonne 4, ligne 46; figures 1-4 *	1	G06K11/18 G05G9/053
A	DE-A-3 320 057 (F. KRUPP) *document en entier*	1	
A	GB-A-2 154 306 (DEPRAZ) * abrégé; figures 2,3 *	1	
A	EP-A-0 265 534 (HEWLETT-PACKARD) * abrégé; figure 3 *	1	

DOMAINES TECHNIQUES RECHERCHES (Int. Cl.5)

G06K
G05G
G06F

Le présent rapport a été établi pour toutes les revendications

Lieu de la recherche	Date d'achèvement de la recherche	Examinateur
BERLIN	31 MARS 1992	DUCREAU F.

CATEGORIE DES DOCUMENTS CITES

X : particulièrement pertinent à lui seul
Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie
A : arrière-plan technologique
O : divulgation non-écrite
P : document intercalaire

T : théorie ou principe à la base de l'invention
E : document de brevet antérieur, mais publié à la date de dépôt ou après cette date
D : cité dans la demande
L : cité pour d'autres raisons

& : membre de la même famille, document correspondant

EPO FORM 1503 03.82 (P0402)

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