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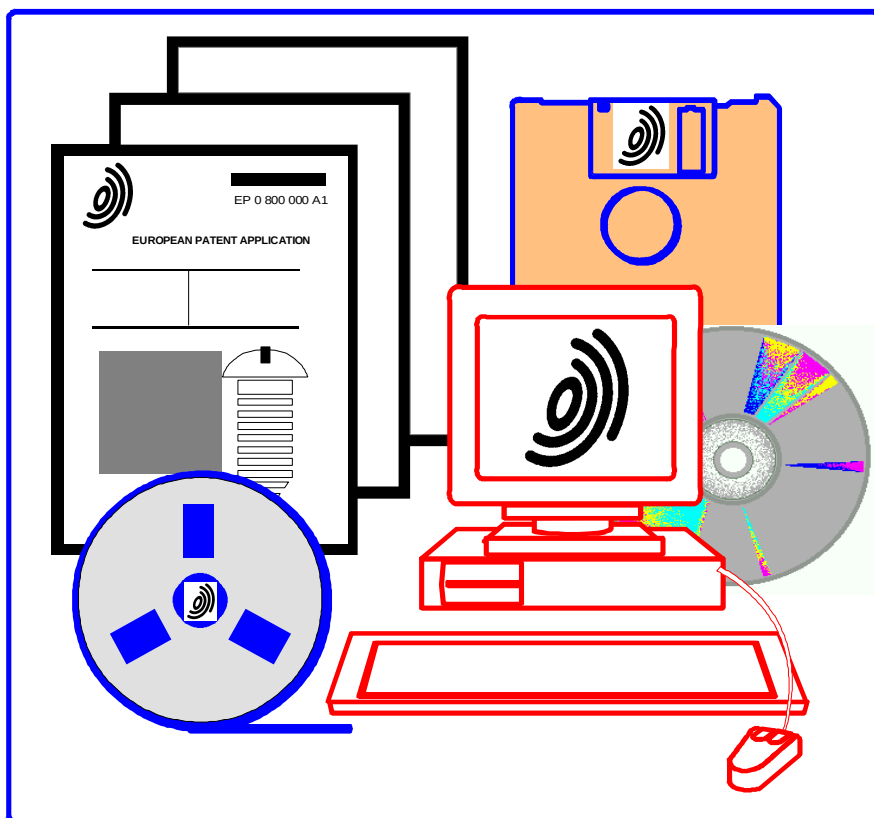


EPO Publications I: Standards

Character set & entity references

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SGML



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EPO CHARACTER SET AND ENTITY REFERENCES

Introduction

One of the most common problems in data transfer between computer systems, which may be the same or completely different systems, is whether or not they 'speak the same language' at the most basic level - the **character set** level used to encode data. A character set is:

"a set of characters that is handled by a specific machine. The set usually includes the English alphanumeric characters, special characters and operation characters, all of which are graphics characters, and various control characters. Graphic characters thus denote a printed mark or a space while control characters produce some particular effect."

A character set is contained in a **code page**. The simplest code page, which is an international standard, is *ISO 646: 1983 IRV (International Reference Version)*. However, this character set is so basic that to utilise it in an environment such as the EPO would mean the substitution of many characters, such as accented characters, with entity references (explained below).

Probably the most common code page of characters used on computers is **ASCII** (American Standard Code for Information Interchange), which, in its 7-bit version (128 characters), is almost identical with ISO 646. However, when people talk about ASCII they almost always mean **extended ASCII** - an 8 bit character set of 256 characters. This character set is more useful, to the EPO, because it contains, for example, accented characters. The picture is complicated further in that there are different code pages for extended ASCII, especially on IBM compatible PCs. Here the most common are known as code pages **437** and **850**. Code page 850 is used in the EPO because it is multilingual and, therefore, has more accented characters for so-called Swiss-German keyboards; but the commonest code page is probably IBM code page 437. In creating the character set used by the EPO we have taken this fact into account and 'mapped' our base code page to be compliant with ASCII 437 and 850.

Most EPO computer systems and projects process data on the EPO's IBM 9000 series mainframe - one of the code pages on this system is IBM **EBCDIC** (Extended Binary Coded Decimal Interchange Code) **Code Page 500**. This is an internationally recognised code page for EBCDIC. In re-designing the EPO publication system we have decided to use this code page as it is the most convenient to use in the EPO environment (most, if not all, EPO workstations can display and print the characters in this code page).

However, not all the codes on code page 500 are used in the publication systems of the EPO; because, in order to maintain compatibility between EBCDIC codes and IBM ASCII 437/850 codes, code page 500 has been reduced to those codes which have a one-to-one relationship with code pages 437/850. (This means that in a straightforward EBCDIC to ASCII conversion all characters will be converted correctly). These reduced tables are shown below. The **reduced** code page 500 will, therefore, be the basic code page for the character coding of:

- \$ EP A and B patent documents
- \$ EP Bulletin
- \$ Bibliographic data (based on EPASYS data)

Please note: This document refers only to data processed by the **ELPAC** projects and no other projects within the EPO such as EPOQUE, EPASYS, DOCDB, BACON, etc. These projects have their own character sets and formats.

All **DATIMTEX** data (EP applications and specifications) will be converted to this code page - at the end of 1995 this will amount to about 20 Gbytes of data.

Unless specified otherwise EPO contractors **must** return data to the EPO coded according to IBM EBCDIC code page 500 (reduced).

Entity References For Characters

In patent literature, especially, there are many characters and symbols which do not appear in many code pages, including code pages 500 and 437. Greek letters and mathematical symbols are good examples. These cannot, easily, be keyed or seen on a computer screen. An **entity reference**, using a base character set (typically characters from ISO 646), allows a short reference to be constructed, which, on post-processing, for example, allows a unique character to be displayed or printed.

Entity references consist of three parts:

Order	Part	Description
1	&	entity reference open delimiter
2	omega	entity name
3	;	entity reference close delimiter

Entity references are case sensitive therefore for 'omega' we have two references:

Ω **Ω** Capital omega, Greek
 ω **ω** Small omega, Greek

In many cases, as in the example above, it will be clear from the entity reference name what the character should be. Details of all entity references, contained in an **entity set**, used in a document instance (a patent) must be referenced in the DTD ((Document Type Definition). The EPO entity set conforms to WIPO Standard ST.32, which contains the DTD for patent documents. However, the WIPO ST.32 DTD references all current ISO character entity references but these are not all used by the EPO, by any means. Therefore, any DTD validating EPO patent documents must reference only one character entity set - EPOPAT:ENT, for example - which contains a combination of ISO entities and all entities referenced in the 'patspat.ent' file. The EPO entity set is shown in the tables below and also together with other entity sets in Annexes 2 and 3

If a character is NOT in reduced code page 500 or in the EPO character entity set two options are open to EPO publication contractors:

1. Create a new entity reference, **after consultation with the EPO**, which may be added to the EPO entity set. Wherever possible these new entity references must be based on ISO entity references.
2. If all else fails, and the 'character' is thought to be a 'one-off', the publication contractors may capture the character as an embedded image according to WIPO standard ST.32. This will always be the type 'FF' - undefined character, eg.:

<EMI ID='3.1' HE=4 W=4 TI=FF>

Further details can be found in the "*Rules for Contractors*" and WIPO ST.32.

Please note:

It is the responsibility of EPO contractors, and others receiving EPO data, to make sure that all entity references are interpreted correctly according to this document. To create a complete font set covering all EPO entity references (in bold, italic, superscript and subscript - as well as 'normal' text) is not a trivial task and careful attention should be paid to this area. We have created test data sets to check this and these are available on request.

Character Set

On the following page are printed two code page tables, the first showing the reduced code page 500 and the second their ASCII equivalents from IBM code page 437/850 (which is also reduced since there is not a one to one relationship between the two code pages). (For reference purposes the complete set of EBCDIC characters contained in Code Page 500 are shown in Annex 1).

Following the tables is a description of each code together with its graphical representation.

All other characters NOT in the code pages below are to be coded as entity references.

IBM EBCDIC Code Page 500 (Reduced)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0					SP	&	-			°	μ		{	}	\	0
1						é	/	É	a	j	~	£	A	J	÷	1
2					â	ê			b	k	s		B	K	S	2
3					ä	ë	Ä		c	l	t	·	C	L	T	3
4					à	è			d	m	u		D	M	U	4
5					á				e	n	v		E	N	V	5
6						î			f	o	w		F	O	W	6
7					å	ï	Å		g	p	x	¼	G	P	X	7
8					ç	ì	Ç		h	q	y	½	H	Q	Y	8
9					ñ		Ñ	`	i	r	z		I	R	Z	9
A					[	]		:	«		ı	¬			²	
B					.	\$	,	#	»		¿		ô	û		
C					<	*	%	@		æ			ö	ü	Ö	Ü
D					(	)	_	'					ò	ù		
E					+	;	>	=		Æ						
F					!	^	?	"	±					ÿ		

ASCII (IBM) Code Page 437/850 (Reduced)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			SP	0	@	P	`	p	Ç	É	á					
1			!	1	A	Q	a	q	ü	æ						±
2			"	2	B	R	b	r	é	Æ						
3			#	3	C	S	c	s	â	ô						
4			\$	4	D	T	d	t	ä	ö	ñ					
5			%	5	E	U	e	u	à	ò	Ñ					
6			&	6	F	V	f	v	å	û					μ	÷
7			'	7	G	W	g	w	ç	ù						
8			(	8	H	X	h	x	ê	ÿ	¿					°
9			)	9	I	Y	i	y	ë	Ö						
A			*	:	J	Z	j	z	è	Ü	¬					·
B			+	;	K	[	k	{	ï		½					
C			,	<	L	\	l		î	£	¼					
D			-	=	M	]	m	}	ì		ı					²
E			.	>	N	^	n	~	Ä		«					
F			/	?	O	_	o		Å		»					

Note: The characters in columns 2-7 are ISO 646 compatible.

Character Set Description

Char.	EBCDIC 500	ASCII 437/850	Description
NP	0C		New page control code
CR	0D		Carriage return control code
NL	15		New line control code
ESC	27		Escape control code
SP	40	20	Space
â	42	83	Small a circumflex
ä	43	84	Small a umlaut
à	44	85	Small a grave
á	45	A0	Small a acute
å	47	86	Small a over circle
ç	48	87	Small c cedilla
ñ	49	A4	Small n tilde
[	4A	5B	Open square bracket
.	4B	2E	Period
<	4C	3C	Less-than sign
(	4D	28	Left
+	4E	2B	Plus
!	4F	21	Exclamation mark
&	50	26	Ampersand
é	51	82	Small e acute
ê	52	88	Small e circumflex
ë	53	89	Small e umlaut
è	54	8A	Small e grave
î	56	8C	Small i circumflex
ï	57	8B	Small i umlaut
ì	58	8D	Small i grave
]	5A	5D	Close square bracket
\$	5B	24	Dollar
*	5C	2A	Asterisk
)	5D	29	Right, close parenthesis
;	5E	3B	Semicolon
^	5F	5E	Circumflex
-	60	2D	Hyphen
/	61	2F	Solidus
Ä	63	8E	Capital A umlaut
Å	67	8F	Capital A over circle
Ç	68	80	Capital C cedilla
Ñ	69	A5	Capital N tilde

Char.	EBCDIC 500	ASCII 437/850	Description
,	6B	2C	Comma
%	6C	25	Percent
_	6D	5F	Underscore
>	6E	3E	Greater than
?	6F	3F	Question mark
É	71	90	Capital E acute
`	79	60	Grave
:	7A	3A	Colon
#	7B	23	Numeral sign
@	7C	40	Commercial at
'	7D	27	Apostrophe
=	7E	3D	Equals
"	7F	22	Quotation
a	81	61	Small a
b	82	62	Small b
c	83	63	Small c
d	84	64	Small d
e	85	65	Small e
f	86	66	Small f
g	87	67	Small g
h	88	68	Small h
i	89	69	Small i
«	8A	AE	Much less than
»	8B	AF	Much greater than
±	8F	F1	Plus minus
°	90	F8	Degree
j	91	6A	Small j
k	92	6B	Small k
l	93	6C	Small l
m	94	6D	Small m
n	95	6E	Small n
o	96	6F	Small o
p	97	70	Small p
q	98	71	Small q
r	99	72	Small r
æ	9C	91	Small diphthong
Æ	9E	92	Capital diphthong
μ	A0	E6	Small Greek mu
~	A1	7E	Tilde
s	A2	73	Small s

Char.	EBCDIC 500	ASCII 437/850	Description
t	A3	74	Small t
u	A4	75	Small u
v	A5	76	Small v
w	A6	77	Small w
x	A7	78	Small x
y	A8	79	Small y
z	A9	7A	Small z
¡	AA	AD	Inverted exclamation mark
¿	AB	A8	Inverted question mark
£	B1	9C	Pound sign
·	B3	FA	Centre dot
¼	B7	AC	Quarter
½	B8	AB	Half
¬	BA	AA	Not sign
	BB	7C	Vertical bar
{	C0	7B	Open curly brace
A	C1	41	Capital A
B	C2	42	Capital B
C	C3	43	Capital C
D	C4	44	Capital D
E	C5	45	Capital E
F	C6	46	Capital F
G	C7	47	Capital G
H	C8	48	Capital H
I	C9	49	Capital I
ô	CB	93	Small o circumflex
ö	CC	94	Small o umlaut
ò	CD	95	Small o grave
}	D0	7D	Close curly brace
J	D1	4A	Capital J
K	D2	4B	Capital K
L	D3	4C	Capital L
M	D4	4D	Capital M
N	D5	4E	Capital N
O	D6	4F	Capital O
P	D7	50	Capital P
Q	D8	51	Capital Q
R	D9	52	Capital R
û	DB	96	Small u circumflex
ü	DC	81	Small u umlaut

Char.	EBCDIC 500	ASCII 437/850	Description
ù	DD	97	Small u grave
ÿ	DF	98	Small y umlaut
\	E0	5C	Back slash
÷	E1	F6	Divide sign
S	E2	53	Capital S
T	E3	54	Capital T
U	E4	55	Capital U
V	E5	56	Capital V
W	E6	57	Capital W
X	E7	58	Capital X
Y	E8	59	Capital Y
Z	E9	5A	Capital Z
²	EA	FD	Superscript 2
Ö	EC	99	Capital O umlaut
0	F0	30	Figure 0
1	F1	31	Figure 1
2	F2	32	Figure 2
3	F3	33	Figure 3
4	F4	34	Figure 4
5	F5	35	Figure 5
6	F6	36	Figure 6
7	F7	37	Figure 7
8	F8	38	Figure 8
9	F9	39	Figure 9
Ü	FC	9A	Capital U umlaut
	FF	FF	Undefined character

Character entity references

As stated in the introduction an entity reference may be used wherever a character is required that is not present in the character code set shown above.

A problem can arise when a character that has been assigned special significance in the SGML declaration, in the reference concrete syntax to be precise, occurs as part of the text. A particular case is where the subject matter contains mathematical expressions in which "less than" (<) and "greater than" (>) signs frequently occur. These are also the start and end characters for SGML tags (according to the declaration in WIPO ST.32). Therefore, within the document instance, when these characters occur they must be entered as entity references; otherwise any data between these characters might be treated as an SGML tag.

Such characters most frequently used in the implementation of SGML markup, in the EPO, are "less than", "greater than" and "ampersand". When encountered in a document as text data they are to be replaced as necessary by the entity references listed below.

Throughout an entire document, except as the start indicator of an entity reference, the 'ampersand' sign is to be coded:

(&) ampersand	&
---------------	-------

Throughout an entire document, except as the delimiters of a generic code, the "less than" and "greater than" signs are to be coded:

(<) less than	<
(>) greater than	>

The fonts used during the composition of the entity reference table below can only give an impression of the final character required for printing. The actual format of the characters may differ on publication. Those entity references with (EPO) following the description have been created by the EPO and are non-ISO entity references. These entity references are contained in the epopat.ent file referenced in the EPO DTD, see also Annexes 2 and 3.

EPO Entity References		
Char	Entity Reference	Description
Á	Á	Capital A acute
Â	Â	Capital A circumflex
´	´	Acute
À	À	Capital A grave
ⴐ	ℵ	Aleph
α	α	Small alpha, Greek
&	&	Ampersand
∧	∧	Logical AND
∠	∠	Angle
∟	&ang90;	Right (90 degree) angle
•	∢	Angle-spherical; spherical angle
≈	&anq;	Approximately but not actually equal to (EPO)
≈	≈	Approximate; asymptotic to
≈	≊	Approximate, equals; asymptotic or equal to
Ã	Ã	Capital A tilde
ã	ã	Small a tilde
∮	∳	Contour integral, anti-clockwise
∴	∵	Because
¾	϶	Such that
β	β	Small beta, Greek
	␣	Blank substitute
◓	┐	Lower left quadrant (boxes only)
◔	┌	Lower right quadrant (boxes only)
◕	┬	Lower left and right quadrants (boxes only)
◖	┴	Upper left and right quadrants (boxes only)
◗	┘	Upper left quadrant (boxes only)
◘	└	Upper right quadrant (boxes only)
◙	┼	All four quadrants (boxes only)
◚	┤	Upper and lower left quadrants (boxes only)
◛	├	Upper and lower right quadrants (boxes only)
∕	¦	Broken vertical bar

EPO Entity References		
Char	Entity Reference	Description
,	•	Round bullet, filled
≈	≎	Bump equals; approximately equivalent; geometrical equivalent to
⋈	≏	Bumpy equals, equal; approximately equal to
∩	∩	Intersection
¸	¸	Cedilla
¢	¢	Cent
χ	χ	Small chi, Greek
○	○	Circle, open
●	&circlef;	Circle, filled
⊂	∁	Complement
∘	∘	Composite function (small circle)
≅	≅	Congruent with; similar to
∮	∮	Contour integral; circuited integral
©	©	Copyright
⋈	⋞	Curly equal precedes
⋈	⋟	Curly equal succeeds
↵	↶	Left curved arrow
∪	∪	Union or logical sum
⊂	&cupre;	Is contained in or equal to
↷	↷	Right curved arrow
¤	¤	International currency sign
∮	∲	Contour integral, clockwise
∮	∱	Clockwise integral
†	†	Dagger
‡	‡	Double dagger
↓	↓	Downward arrow; decreases
Δ	Δ	Capital delta, Greek
δ	δ	Small delta, Greek
◇	⋄	Open diamond
◆	&diamondf;	Diamond, filled
♦	♦	Diamonds suit symbol

EPO Entity References		
Char	Entity Reference	Description
↙	&dlarr;	Downward left-pointing arrow (south-west)
Æ	&dlowbar;	Double underscore (EPO)
·	˙	Superscript dot; dot above
#	¨	Dieresis or umlaut mark; double dot
↘	&drarr;	Downward right-pointing arrow (south-east)
∇	▿	Differential vector operator (down triangle)
▼	▾	Down triangle filled
Ê	Ê	Capital E circumflex
≐	≒	Equals, falling dots; approximately equal to (is the image of)
È	È	Capital E grave
.	&Ehac;	Equals with hacek; equiangular (EPO)
∅	∅	Slashed zero; empty set
	 	Required space, emspace
ε	ε	Small epsilon, Greek
^	≡	Identical with
≐	≐	Equals, dot over; approaches the limit
η	η	Small eta, Greek
Ð	Ð	Capital ETH, Icelandic
ð	ð	Small eth, Icelandic
Ë	Ë	Capital E umlaut
∃	∃	At least one exists; there exists
♀	♀	Female
∀	∀	For all
c	⅛	One eighth
¾	¾	Three quarters
d	⅜	Three eighths
e	⅝	Five eighths
f	⅞	Seven eighths
Γ	Γ	Capital gamma, Greek
γ	γ	Small gamma, Greek
≥	≥	Greater than or equal to
.	≧	Greater than, double equals

EPO Entity References		
Char	Entity Reference	Description
C	≷	Greater than, less than
k	≩	Greater-than, not double equals
$\nlessgtr$	⪈	Greater-than, not equal
$\gtrsim$	≳	Greater than, similar
>	>	Greater than
/	&guilder;	Dutch florin (EPO)
	 	Hair space
$\leftrightarrow$	↔	Left-right arrow; mutually implies
X	⊹	Hermitian conjugative matrix
Z	∻	Homothetic
C	―	Horizontal bar; fractional bar
Í	Í	Capital I acute
í	í	Small i acute
Î	Î	Capital I circumflex
$\Leftrightarrow$	⇔	If and only if
Ì	Ì	Capital I grave
Ä	℩	Inverted iota
$\mathbb{H}$	&iis;	Includes in set (EPO)
ij	ĳ	Small ij, ligature
$\neg$	⊷	Image of
∞	∞	Infinity
$\iint$	∬	Double integral
$\int$	∫	Integral
$\in$	∈	Set membership
1	&iss;	Included in set (EPO)
Ï	Ï	Capital I umlaut
κ	κ	Small kappa, Greek
Λ	Λ	Capital lambda, Greek
λ	λ	Small lambda, Greek
<	⟨	Left angle bracket
$\leftarrow$	←	Left arrow; Relata of a relation
$\Leftarrow$	⇐	Left double arrow; is implied by

EPO Entity References		
Char	Entity Reference	Description
7	&ldurule;	Left - and +45 degree rule (EPO)
$\leq$	≤	Less than or equal to
$\leq$	≦	Less than, double equals
A	≶	Less than, greater than
8	&lhdurule;	Left horizontal, - and +45 degree rule (EPO)
$\int$	&lint;	Lower integral (EPO)
ℓ	&litre;	Litres
`	≨	Less than but not double equals to
$\neq$	⪇	Less than but not equal to
◊	◊	Lozenge; total mark
”	&lparstr;	Left parenthesis, stroke (EPO)
$\Leftrightarrow$	&lrarr2;	Left arrow over right arrow
$\lesssim$	≲	Less than, similar
–	&lsqbstr;	Left square bracket, stroke (EPO)
<	<	Less-than sign
♂	♂	Male
L	↦	Maps to; functional relationship
f	∺	Geometric properties, minus with four dots
*	*	Middle asterisk
'	&min;	Minutes (EPO)
-	−	Minus
d	∸	Minus with dot above; symmetric difference
$\mp$	∓	Minus-or-plus sign
®	∾	Most positive
$\napprox$	&n timer;	Not approximate; not asymptotic to
$\ncong$	≇	Not congruent with; neither approximately nor actually equal to
$\neq$	≠	Not equal to
$\nearrow$	↗	Upward right-pointing arrow (north-east)
$\nequiv$	≢	Not equivalent; not identical with
$\nexists$	&n timer;	Negated exists; there does not exist
'	≧̸	Not greater than, double equals

EPO Entity References		
Char	Entity Reference	Description
⩵	≱	Not greater than, equal
⩶	≯	Not greater than
⩷	&ngtneq;	Neither greater than nor equivalent to
⩸	&ngtnlt;	Neither greater than nor less than (EPO)
⊃	∋	Contains
⋈	≰	Neither less than nor double equal to
⩹	≮	Not less than
⩺	&nltneq;	Neither less than nor equivalent to (EPO)
⩻	&nltngt;	Neither less than not greater than (EPO)
∉	∉	Negated set membership; is not an element of
⊄	∌	Does not contain, negated contains
⧻	∦	Not parallel to
⧼	↛	Not right arrow; does not tend to
⧽	≁	Not similar; not equivalent to
⧿	≄	Not similar, equals; not asymptotically equal to
⊈	⊅	Not subset; non-proper inclusion in set
⊉	⊈	Not subset, equals; not contained as a subclass in a set
⊄	⊅	Not superset; does not properly include
⊋	⊉	Not superset, equals; does not contain as subset
ν	ν	Small nu, Greek
	 	Numeric space (width of a number)
↖	↖	Upward left-pointing arrow (north west)
Ó	Ó	Capital O acute
ó	ó	Small o acute
Ô	Ô	Capital O circumflex
⊙	⊙	Middle dot in circle; tensor product
Ò	Ò	Capital O grave
Ω	Ω	Capital omega, Greek
ω	ω	Small omega, Greek
ο	ο	Small omicron Greek (EPO)
⊖	⊖	Minus sign in circle; symmetric difference

EPO Entity References		
Char	Entity Reference	Description
⊕	⊕	Plus sign in circle, direct sum, earth sign
∨	∨	Logical OR
î	ª	Ordinal indicator, feminine (small a underscore)
ž	º	Ordinal indicator, masculine (small o underscore)
-	⊶	Original of
Ø	Ø	Capital O, slash
ø	ø	Small o, slash
∅	⊘	Diameter
Õ	Õ	Capital O tilde
õ	õ	Small o tilde
⊗	⊗	Multiply sign in circle; direct product
—	&overbar;	Overscore (EPO)
⸀	&Overbar;	Double overscore (EPO)
∥	∥	Parallel to
¶	¶	Paragraph sign
€	&parl;	Parallelogram (EPO)
∂	∂	Partial differential
‰	‰	Per mille
⊥	⊥	Perpendicular; orthogonal
₧	&peseta;	Peseta (EPO)
Φ	Φ	Capital phi, Greek
φ	&phis;	Small phi, Greek; straight phi
ω	ϕ	Curly, or open phi
Π	Π	Capital pi, Greek
π	π	Small pi, Greek
ℏ	ℏ	Planck's 2pi
⊕̇	∔	Plus sign, dot above; direct sum
≪	≺	Precedes; is dominated by; has a lower rank than
″	″	Double prime
′	′	Single prime
≲	≾	Precedes, similar; dominance
—	⊰	Precedes under relation

EPO Entity References		
Char	Entity Reference	Description
Ψ	Ψ	Capital psi, Greek
ψ	ψ	Small psi, Greek
√	√	Radical
⟩	⟩	Right angle bracket
⇒	⇒	Implies
→	→	Right arrow; approaches
↗	↠	Two headed right arrow; on to map
↘	↪	Right arrow, hooked; curved arrow
↗	↝	Right arrow wavy; functional relationship
↗	&rdurule;	Right - and +45 degree rule (EPO)
⊠	▭	Rectangle
®	®	Registered trade mark
↗	&rhdurule;	Right horizontal, - and +45 degree rule (EPO)
ρ	ρ	Small rho, Greek
⇨	&rlarr2;	Right arrow over left arrow
•	&rparstr;	Right parenthesis, stroke (EPO)
⌋	&rsqbstr;	Right square bracket, stroke (EPO)
℞	℞	Pharmaceutical prescription (Rx)
₊	&sbplus;	Subscript plus (EPO)
ℓ	≻	Succeeds; has a higher rank than
⊃	≽	Contains or is equal to
″	&sec;	Seconds (EPO)
§	§	Section sign
-	­	Syllable hyphen
Σ	Σ	Capital sigma, Greek
σ	σ	Small sigma, Greek
~	∼	Similar
≈	≃	Similar, equals
☿	&sinew;	Sine wave (EPO)
⁄	&sl0;	Slash zero
⁺	&spplus;	Superscript plus (EPO)
⊂	⊏	Square subset; image of

EPO Entity References		
Char	Entity Reference	Description
<	⊐	Square superset; original of
□	□	Square, open
■	▪	Square, filled; end of proof; Halmos
⌐	&sqslash;	Square, slash; cancelled box (EPO)
⊂	⊂	Subset or is implied by
₀	&sub0;	Subscript 0 (EPO)
₁	&sub1;	Subscript 1 (EPO)
₂	&sub2;	Subscript 2 (EPO)
₃	&sub3;	Subscript 3 (EPO)
₄	&sub4;	Subscript 4 (EPO)
₅	&sub5;	Subscript 5 (EPO)
₆	&sub6;	Subscript 6 (EPO)
₇	&sub7;	Subscript 7 (EPO)
₈	&sub8;	Subscript 8 (EPO)
₉	&sub9;	Subscript 9 (EPO)
⊆	⊆	Subset, equals
-	&submin;	Subscript minus (EPO)
⊂	⫋	Subset, not double equals; is strictly included in set
∑	∑	Summation operator
⊃	⊃	Superset or implies
⁰	&sup0;	Superscript 0 (EPO)
¹	¹	Superscript 1
³	³	Superscript 3
⁴	&sup4;	Superscript 4 (EPO)
⁵	&sup5;	Superscript 5 (EPO)
⁶	&sup6;	Superscript 6 (EPO)
⁷	&sup7;	Superscript 7 (EPO)
⁸	&sup8;	Superscript 8 (EPO)
⁹	&sup9;	Superscript 9 (EPO)
^a	&supa;	Superscript a (EPO)
^	&supand;	Superscript and (EPO)
,	&supcomma;	Superscript comma (EPO)
⊇	⊇	Superset; equals

EPO Entity References		
Char	Entity Reference	Description
⁻	&supmin;	Superscript minus (EPO)
ß	ß	Small s sharp
τ	τ	Small tau, Greek
∴	∴	Therefore
Θ	Θ	Capital theta, Greek
θ	&thetas;	Small theta, Greek
ϑ	ϑ	Curly or open theta
Þ	Þ	Capital Thorn, Icelandic
þ	þ	Small thorn, Icelandic
×	×	Multiply sign
∫	∭	Triple integral
ℙ	&tpime;	Triple prime
™	™	Trademark
Ú	Ú	Capital U acute
ú	ú	Small u acute
↑	⇑	Up double arrow
↑	↑	Upward arrow; increases; exponent
Û	Û	Capital U circumflex
Ù	Ù	Capital U grave
↰	↿	Up harpoon-left
∫	&uint;	Upper integral (EPO)
¨	¨	Umlaut
Υ	ϒ	Capital upsilon, Greek
υ	υ	Small upsilon, Greek
Δ	▵	Up triangle; increment
▲	▴	Up triangle, filled
↕	↕	Up and down arrow; vertical relationship
↕	⇕	Up and down double arrow
⋮	⊢	Vertical dash; assertion; reduced to; implies
⋮	⊨	Vertical, double dash; models; statement is true (result in)
◁	⊲	Left triangle open, variant; implied by
∝	∝	Proportional, variant

EPO Entity References		
Char	Entity Reference	Description
▷	⊳	Right triangle open, variant; implies
⊃	⫌︀	Superset, not double equals, variant; strictly includes in set
≈	≙	Estimates; corresponds to
℘	℘	Weierstrass elliptical function, p
Ξ	Ξ	Capital xi, Greek
ξ	ξ	Small xi, Greek
Ý	Ý	Capital Y acute
ý	ý	Small y acute
¥	¥	Yen
ζ	ζ	Small zeta, Greek

Annex 1 - IBM EBCDIC Code Page 500 (Complete)(For EPO reference only - this code page will **NOT** be used for data exchange)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0						&	-	ø	Ø	°	μ	¢	{	}	\	0
1						é	/	É	a	j	~	£	A	J	÷	1
2					â	ê	Â	Ê	b	k	s	¥	B	K	S	2
3					ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
4					à	è	À	È	d	m	u	©	D	M	U	4
5					á	í	Á	Í	e	n	v	§	E	N	V	5
6					ã	î	Ã	Î	f	o	w	¶	F	O	W	6
7					å	ï	Å	Ï	g	p	x	¼	G	P	X	7
8					ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
9					ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
A					[	]	'	:	«	ª	¡	¬	-	¹	²	³
B					.	\$	,	#	»	º	¿		ô	û	Ô	Û
C					<	*	%	@	ð	æ		—	ö	ü	Ö	Ü
D					(	)	_	'	ý		Ý	¨	ò	ù	Ò	Ù
E					+	;	>	=	þ	Æ	Ð	´	ó	ú	Ó	Ú
F					!	^	?	"	±	α	®	×	õ	ÿ	Õ	Ž

Complete IBM EBCDIC Code Page 500 Character Set Description

Complete IBM EBCDIC Code Page 500 (for EPO use only)				
Char.	EBCDIC 500	ASCII 437/850	Entity Reference	Description
NP	0C			New page control code
CR	0D			Carriage return control code
NL	15			New line control code
ESC	27			Escape control code
SP	40	20		Space
	41		 	Required space
â	42	83		Small a circumflex
ä	43	84		Small a umlaut
à	44	85		Small a grave
á	45	A0		Small a acute
ã	46		ã	Small a tilde
å	47	86		Small a over circle
ç	48	87		Small c cedilla
ñ	49	A4		Small n tilde
[	4A	5B		Open square bracket
.	4B	2E		Period
<	4C	3C		Less-than sign
(	4D	28		Left
+	4E	2B		Plus
!	4F	21		Exclamation mark
&	50	26		Ampersand
é	51	82		Small e acute
ê	52	88		Small e circumflex
ë	53	89		Small e umlaut
è	54	8A		Small e grave
í	55		í	Small i acute
î	56	8C		Small i circumflex
ï	57	8B		Small i umlaut
ì	58	8D		Small i grave
ß	59		ß	Sharp S
]	5A	5D		Close square bracket
\$	5B	24		Dollar
*	5C	2A		Asterisk
)	5D	29		Right
;	5E	3B		Semicolon
^	5F	5E		Circumflex

Complete IBM EBCDIC Code Page 500 (for EPO use only)				
Char.	EBCDIC 500	ASCII 437/850	Entity Reference	Description
-	60	2D		Hyphen
/	61	2F		Solidus
Â	62		Â	Capital A circumflex
Ä	63	8E		Capital A umlaut
À	64		À	Capital A grave
Á	65		Á	Capital A acute
Ã	66		Ã	Capital A tilde
Å	67	8F		Capital A over circle
Ç	68	80		Capital C cedilla
Ñ	69	A5		Capital N tilde
	6A		¦	Broken vertical bar
,	6B	2C		Comma
%	6C	25		Percent
_	6D	5F		Underscore
>	6E	3E		Greater than
?	6F	3F		Question mark
ø	70		ø	Small o slash
É	71	90		Capital E acute
Ê	72		Ê	Capital E circumflex
Ë	73		Ë	Capital E umlaut
È	74		È	Capital E grave
Í	75		Í	Capital I acute
Î	76		Î	Capital I circumflex
Ï	77		Ï	Capital I umlaut
Ì	78		Ì	Capital I grave
`	79	60		Grave
:	7A	3A		Colon
#	7B	23		Numeral sign
@	7C	40		Commercial at
'	7D	27		Apostrophe
=	7E	3D		Equals
"	7F	22		Quotation
Ø	80		Ø	Capital O slash
a	81	61		Small a
b	82	62		Small b
c	83	63		Small c
d	84	64		Small d
e	85	65		Small e
f	86	66		Small f

Complete IBM EBCDIC Code Page 500 (for EPO use only)				
Char.	EBCDIC 500	ASCII 437/850	Entity Reference	Description
g	87	67		Small g
h	88	68		Small h
i	89	69		Small i
«	8A	AE		Much less than
»	8B	AF		Much greater than
-	8C		ð	Small eth
ÿ	8D		ý	Small y acute
þ	8E		þ	Small thorn
±	8F	F1		Plus minus
°	90	F8		Degree
j	91	6A		Small j
k	92	6B		Small k
l	93	6C		Small l
m	94	6D		Small m
n	95	6E		Small n
o	96	6F		Small o
p	97	70		Small p
q	98	71		Small q
r	99	72		Small r
^a	9A	A6	ª	Superscript a underscored
^o	9B	A7	º	Superscript o underscored
æ	9C	91		Small diphthong
¸	9D		¸	Cedilla
Æ	9E	92		Capital diphthong
¤	9F		¤	International currency sign
μ	A0	E6		Small Greek mu
~	A1	7E		Tilde
s	A2	73		Small s
t	A3	74		Small t
u	A4	75		Small u
v	A5	76		Small v
w	A6	77		Small w
x	A7	78		Small x
y	A8	79		Small y
z	A9	7A		Small z
¡	AA	AD		Inverted exclamation mark
¿	AB	A8		Inverted question mark
Ð	AC		Ð	Capital eth
Ÿ	AD		Ý	Capital Y acute

Complete IBM EBCDIC Code Page 500 (for EPO use only)				
Char.	EBCDIC 500	ASCII 437/850	Entity Reference	Description
þ	AE		Þ	Capital thorn
®	AF		®	Registered trade mark
¢	B0		¢	Cents
£	B1	9C		Pound sign
¥	B2		¥	Yen
·	B3	FA		Centre dot
©	B4		©	Copyright
§	B5	15	§	Section sign
¶	B6	14	¶	Paragraph sign
¼	B7	AC		Quarter
½	B8	AB		Half
¾	B9		¾	Three quarters
¬	BA	AA		Not sign
	BB	7C		Vertical bar
—	BC	16	&overbar;	Over bar
¨	BD		¨	Umlaut
´	BE		´	Acute
×	BF		×	Multiplication sign
{	C0	7B		Open curly brace
A	C1	41		Capital A
B	C2	42		Capital B
C	C3	43		Capital C
D	C4	44		Capital D
E	C5	45		Capital E
F	C6	46		Capital F
G	C7	47		Capital G
H	C8	48		Capital H
I	C9	49		Capital I
-	CA		­	Syllable hyphen
ô	CB	93		Small o circumflex
ö	CC	94		Small o umlaut
ò	CD	95		Small o grave
ó	CE		ó	Small o acute
õ	CF		õ	Small o tilde
}	D0	7D		Close curly brace
J	D1	4A		Capital J
K	D2	4B		Capital K
L	D3	4C		Capital L

Complete IBM EBCDIC Code Page 500 (for EPO use only)				
Char.	EBCDIC 500	ASCII 437/850	Entity Reference	Description
M	D4	4D		Capital M
N	D5	4E		Capital N
O	D6	4F		Capital O
P	D7	50		Capital P
Q	D8	51		Capital Q
R	D9	52		Capital R
¹	DA		¹	Superscript 1
û	DB	96		Small u circumflex
ü	DC	81		Small u umlaut
ù	DD	97		Small u grave
ú	DE		ú	Small u acute
ÿ	DF	98		Small y umlaut
\	E0	5C		Backslash
÷	E1	F6		Divide sign
S	E2	53		Capital S
T	E3	54		Capital T
U	E4	55		Capital U
V	E5	56		Capital V
W	E6	57		Capital W
X	E7	58		Capital X
Y	E8	59		Capital Y
Z	E9	5A		Capital Z
²	EA	FD		Superscript 2
Ô	EB		Ô	Capital O circumflex
Ö	EC	99		Capital O umlaut
Ò	ED		Ò	Capital O grave
Ó	EE		Ó	Capital O acute
Õ	EF		Õ	Capital O tilde
0	F0	30		Figure 0
1	F1	31		Figure 1
2	F2	32		Figure 2
3	F3	33		Figure 3
4	F4	34		Figure 4
5	F5	35		Figure 5
6	F6	36		Figure 6
7	F7	37		Figure 7
8	F8	38		Figure 8
9	F9	39		Figure 9
³	FA		³	Superscript 3

Complete IBM EBCDIC Code Page 500 (for EPO use only)				
Char.	EBCDIC 500	ASCII 437/850	Entity Reference	Description
Û	FB		Û	Capital U circumflex
Ü	FC	9A		Capital U umlaut
Ù	FD		Ù	Capital U grave
Ú	FE		Ú	Capital U acute
	FF	FF		Undefined character

ANNEX 2 - EPO ENTITY REFERENCES

This annex lists all EPO entity references (shown in the table above) in a format required by a DTD. **EPO contractors should ensure that, when parsing EP documents, such a file is referenced in any DTD and no other character entity reference files.**

```

<!-- ENTITY % epopat SYSTEM "epopat.ent" -->
<!-- Character entity references used in EPO patents - it includes ISO
      entities and those from patspent.ent. See Annex D of ST.32
      and EPO "Rules for Contractors".
      These are the only entity references to be used when processing
      EPO data; and the only file to be referenced in the DTD -->
<!-- %epopat; -->
<!-- -->
<!-- -->
<!-- -->
<!ENTITY Aacute SDATA "[Aacute]" -- Capital A acute -->
<!ENTITY Acirc SDATA "[Acirc]" -- Capital A circumflex -->
<!ENTITY acute SDATA "[acute]" -- Acute -->
<!ENTITY Agrave SDATA "[Agrave]" -- Capital A grave -->
<!ENTITY aleph SDATA "[aleph]" -- Aleph -->
<!ENTITY alpha SDATA "[alpha]" -- Small alpha, Greek -->
<!ENTITY amp SDATA "[amp]" -- Ampersand -->
<!ENTITY and SDATA "[and]" -- Logical AND -->
<!ENTITY ang SDATA "[ang]" -- Angle -->
<!ENTITY ang90 SDATA "[ang90]" -- Right (90 degree) angle -->
<!ENTITY angsph SDATA "[angsph]" -- Angle-spherical; spherical angle -->
<!ENTITY anq SDATA "[anq]" -- Approximately but not actually equal
      to (EPO)-->
<!ENTITY ap SDATA "[ap]" -- Approximate; asymptotic to -->
<!ENTITY ape SDATA "[ape]" -- Approximate, equals; asymptotic or
      equal to -->
<!ENTITY Atilde SDATA "[Atilde]" -- Capital A tilde -->
<!ENTITY atilde SDATA "[atilde]" -- Small a tilde -->
<!ENTITY awconint SDATA "[awconint]" -- Contour integral, anti-clockwise -->
<!ENTITY because SDATA "[because]" -- Because -->
<!ENTITY bepsi SDATA "[bepsi]" -- Such that -->
<!ENTITY beta SDATA "[beta]" -- Small beta, Greek -->
<!ENTITY blank SDATA "[blank]" -- Blank substitute -->
<!ENTITY boxdl SDATA "[boxdl]" -- Lower left quadrant (boxes only) -->
<!ENTITY boxdr SDATA "[boxdr]" -- Lower right quadrant (boxes only)-->
<!ENTITY boxhd SDATA "[boxhd]" -- Lower left and right quadrants
      (boxes only) -->
<!ENTITY boxhu SDATA "[boxhu]" -- Upper left and right quadrants
      (boxes only) -->
<!ENTITY boxul SDATA "[boxul]" -- Upper left quadrant (boxes only) -->
<!ENTITY boxur SDATA "[boxur]" -- Upper right quadrant (boxes only)-->
<!ENTITY boxvh SDATA "[boxvh]" -- All four quadrants (boxes only) -->
<!ENTITY boxvl SDATA "[boxvl]" -- Upper and lower left quadrants
      (boxes only) -->
<!ENTITY boxvr SDATA "[boxvr]" -- Upper and lower right quadrants
      (boxes only) -->
<!ENTITY brvbar SDATA "[brvbar]" -- Broken vertical bar -->
<!ENTITY bull SDATA "[bull]" -- Round bullet, filled -->
<!ENTITY bump SDATA "[bump]" -- Bump equals; approximately
      equivalent; geometrical equivalent to -->
<!ENTITY bumpe SDATA "[bumpe]" -- Bumpy equals, equal; approximately
      equal to -->
<!ENTITY cap SDATA "[cap]" -- Intersection -->
<!ENTITY cedil SDATA "[cedil]" -- Cedilla -->
<!ENTITY cent SDATA "[cent]" -- Cent -->
<!ENTITY chi SDATA "[chi]" -- Small chi, Greek -->
<!ENTITY cir SDATA "[cir]" -- Circle, open -->
<!ENTITY circlef SDATA "[circlef]" -- Circle, filled -->
<!ENTITY comp SDATA "[comp]" -- Complement -->
<!ENTITY compfn SDATA "[compfn]" -- Composite function (small circle)-->
<!ENTITY cong SDATA "[cong]" -- Congruent with; similar to -->
<!ENTITY conint SDATA "[conint]" -- Contour integral;
      circuited integral -->
<!ENTITY copy SDATA "[copy]" -- Copyright -->
<!ENTITY cuepr SDATA "[cuepr]" -- Curly equal precedes -->
<!ENTITY cuesc SDATA "[cuesc]" -- Curly equal succeeds -->
<!ENTITY cularr SDATA "[cularr]" -- Left curved arrow -->

```

<!ENTITY cup	SDATA "[cup	]" -- Union or logical sum	-->
<!ENTITY cupre	SDATA "[cupre	]" -- Is contained in or equal to	-->
<!ENTITY curarr	SDATA "[curarr	]" -- Right curved arrow	-->
<!ENTITY curren	SDATA "[curren	]" -- International currency sign	-->
<!ENTITY cwconint	SDATA "[cwconint	]" -- Contour integral, clockwise	-->
<!ENTITY cwint	SDATA "[cwint	]" -- Clockwise integral	-->
<!ENTITY dagger	SDATA "[dagger	]" -- Dagger	-->
<!ENTITY Dagger	SDATA "[Dagger	]" -- Double dagger	-->
<!ENTITY darr	SDATA "[darr	]" -- Downward arrow; decreases	-->
<!ENTITY Delta	SDATA "[Delta	]" -- Capital delta, Greek	-->
<!ENTITY delta	SDATA "[delta	]" -- Small delta, Greek	-->
<!ENTITY diam	SDATA "[diam	]" -- Open diamond	-->
<!ENTITY diamondf	SDATA "[diamondf	]" -- Diamond, filled	-->
<!ENTITY diams	SDATA "[diams	]" -- Diamonds suit symbol	-->
<!ENTITY dlarr	SDATA "[dlarr	]" -- Downward left-pointing arrow	-->
<!ENTITY dlowbar	SDATA "[dlowbar	]" -- Double underscore (EPO)	-->
<!ENTITY dot	SDATA "[dot	]" -- Superscript dot; dot above	-->
<!ENTITY Dot	SDATA "[Dot	]" -- Dieresis or umlaut mark; double dot	-->
<!ENTITY drarr	SDATA "[drarr	]" -- Downward right-pointing arrow	-->
<!ENTITY dtri	SDATA "[dtri	]" -- Differential vector operator	-->
<!ENTITY dtrif	SDATA "[dtrif	]" -- Down triangle filled	-->
<!ENTITY Ecirc	SDATA "[Ecirc	]" -- Capital E circumflex	-->
<!ENTITY efDot	SDATA "[efDot	]" -- Equals, falling dots;	-->
<!ENTITY Egrave	SDATA "[Egrave	]" -- Capital E grave	-->
<!ENTITY Ehac	SDATA "[Ehac	]" -- Equals with hacek;	-->
<!ENTITY empty	SDATA "[empty	]" -- Slashed zero; empty set	-->
<!ENTITY emsp	SDATA "[emsp	]" -- Required space, emspace	-->
<!ENTITY epsi	SDATA "[epsi	]" -- Small epsilon, Greek	-->
<!ENTITY equiv	SDATA "[equiv	]" -- Identical with	-->
<!ENTITY esdot	SDATA "[esdot	]" -- Equals, dot over;	-->
<!ENTITY eta	SDATA "[eta	]" -- Small eta, Greek	-->
<!ENTITY ETH	SDATA "[ETH	]" -- Capital ETH, Icelandic	-->
<!ENTITY eth	SDATA "[eth	]" -- Small eth, Icelandic	-->
<!ENTITY Euml	SDATA "[Euml	]" -- Capital E umlaut	-->
<!ENTITY exist	SDATA "[exist	]" -- At least one exists; there exists	-->
<!ENTITY female	SDATA "[female	]" -- Female	-->
<!ENTITY forall	SDATA "[forall	]" -- For all	-->
<!ENTITY frac18	SDATA "[frac18	]" -- One eighth	-->
<!ENTITY frac34	SDATA "[frac34	]" -- Three quarters	-->
<!ENTITY frac38	SDATA "[frac38	]" -- Three eighths	-->
<!ENTITY frac58	SDATA "[frac58	]" -- Five eighths	-->
<!ENTITY frac78	SDATA "[frac78	]" -- Seven eighths	-->
<!ENTITY Gamma	SDATA "[Gamma	]" -- Capital gamma, Greek	-->
<!ENTITY gamma	SDATA "[gamma	]" -- Small gamma, Greek	-->
<!ENTITY ge	SDATA "[ge	]" -- Greater than or equal to	-->
<!ENTITY gE	SDATA "[gE	]" -- Greater than, double equals	-->
<!ENTITY gl	SDATA "[gl	]" -- Greater than, less than	-->
<!ENTITY gnE	SDATA "[gnE	]" -- Greater-than, not double equals	-->
<!ENTITY gne	SDATA "[gne	]" -- Greater-than, not equal	-->
<!ENTITY gsim	SDATA "[gsim	]" -- Greater than, similar	-->
<!ENTITY gt	SDATA "[gt	]" -- Greater than	-->
<!ENTITY guilder	SDATA "[guilder	]" -- Dutch florin (EPO)	-->
<!ENTITY hairsp	SDATA "[hairsp	]" -- Hair space	-->
<!ENTITY harr	SDATA "[harr	]" -- Left-right arrow;	-->
<!ENTITY hercon	SDATA "[hercon	]" -- Hermitian conjugative matrix	-->
<!ENTITY homtht	SDATA "[homtht	]" -- Homothetic	-->
<!ENTITY horbar	SDATA "[horbar	]" -- Horizontal bar; fractional bar	-->
<!ENTITY Iacute	SDATA "[Iacute	]" -- Capital I acute	-->
<!ENTITY iacute	SDATA "[iacute	]" -- Small i acute	-->
<!ENTITY Icirc	SDATA "[Icirc	]" -- Capital I circumflex	-->
<!ENTITY iff	SDATA "[iff	]" -- If and only if	-->
<!ENTITY Igrave	SDATA "[Igrave	]" -- Capital I grave	-->
<!ENTITY iiota	SDATA "[iiota	]" -- Inverted iota	-->
<!ENTITY iis	SDATA "[iis	]" -- Includes in set (EPO)	-->
<!ENTITY ijlig	SDATA "[ijlig	]" -- Small ij, ligature	-->
<!ENTITY imof	SDATA "[imof	]" -- Image of	-->
<!ENTITY infin	SDATA "[infin	]" -- Infinity	-->

<!ENTITY Int	SDATA "[Int	]" -- Double integral	-->
<!ENTITY int	SDATA "[int	]" -- Integral	-->
<!ENTITY isin	SDATA "[isin	]" -- Set membership	-->
<!ENTITY iss	SDATA "[iss	]" -- Included in set (EPO)	-->
<!ENTITY Iuml	SDATA "[Iuml	]" -- Capital I umlaut	-->
<!ENTITY kappa	SDATA "[kappa	]" -- Small kappa, Greek	-->
<!ENTITY Lambda	SDATA "[Lambda	]" -- Capital lambda, Greek	-->
<!ENTITY lambda	SDATA "[lambda	]" -- Small lambda, Greek	-->
<!ENTITY lang	SDATA "[lang	]" -- Left angle bracket	-->
<!ENTITY larr	SDATA "[larr	]" -- Left arrow; Relata of a relation	-->
<!ENTITY lArr	SDATA "[lArr	]" -- Left double arrow; is implied by	-->
<!ENTITY ldurule	SDATA "[ldurule	]" -- Left - and +45 degree rule (EPO)	-->
<!ENTITY le	SDATA "[le	]" -- Less than or equal to	-->
<!ENTITY lE	SDATA "[lE	]" -- Less than, double equals	-->
<!ENTITY lg	SDATA "[lg	]" -- Less than, greater than	-->
<!ENTITY lhdurule	SDATA "[lhdurule	]" -- Left horizontal, - and +45 degree rule (EPO)	-->
<!ENTITY lint	SDATA "[lint	]" -- Lower integral (EPO)	-->
<!ENTITY litre	SDATA "[litre	]" -- Litres	-->
<!ENTITY lnE	SDATA "[lnE	]" -- Less than but not double equals to	-->
<!ENTITY lne	SDATA "[lne	]" -- Less than but not equal to	-->
<!ENTITY loz	SDATA "[loz	]" -- Lozenge; total mark	-->
<!ENTITY lparstr	SDATA "[lparstr	]" -- Left parenthesis, stroke (EPO)	-->
<!ENTITY lrarr2	SDATA "[lrarr2	]" -- Left arrow over right arrow	-->
<!ENTITY lsim	SDATA "[lsim	]" -- Less than, similar	-->
<!ENTITY lsqbstr	SDATA "[lsqbstr	]" -- Left square bracket, stroke (EPO)	-->
<!ENTITY lt	SDATA "[lt	]" -- Less-than sign	-->
<!ENTITY male	SDATA "[male	]" -- Male	-->
<!ENTITY map	SDATA "[map	]" -- Maps to; functional relationship	-->
<!ENTITY mDDot	SDATA "[mDDot	]" -- Geometric properties, minus with four dots	-->
<!ENTITY midast	SDATA "[midast	]" -- Middle asterisk	-->
<!ENTITY min	SDATA "[min	]" -- Minutes (EPO)	-->
<!ENTITY minus	SDATA "[minus	]" -- Minus	-->
<!ENTITY minusd	SDATA "[minusd	]" -- Minus with dot above; symmetric difference	-->
<!ENTITY mnplus	SDATA "[mnplus	]" -- Minus-or-plus sign	-->
<!ENTITY mstpos	SDATA "[mstpos	]" -- Most positive	-->
<!ENTITY nap	SDATA "[nap	]" -- Not approximate; not asymptotic to	-->
<!ENTITY ncong	SDATA "[ncong	]" -- Not congruent with; neither approximately nor actually equal to	-->
<!ENTITY ne	SDATA "[ne	]" -- Not equal to	-->
<!ENTITY nearr	SDATA "[nearr	]" -- Upward right-pointing arrow (north-east)	-->
<!ENTITY nequiv	SDATA "[nequiv	]" -- Not equivalent; not identical	-->
<!ENTITY nexist	SDATA "[nexist	]" -- Negated exists; there does not exist	-->
<!ENTITY ngE	SDATA "[ngE	]" -- Not greater than, double equals	-->
<!ENTITY nge	SDATA "[nge	]" -- Not greater than, equal	-->
<!ENTITY ngt	SDATA "[ngt	]" -- Not greater than	-->
<!ENTITY ngtneq	SDATA "[ngtneq	]" -- Neither greater than nor equivalent to	-->
<!ENTITY ngtnlt	SDATA "[ngtnlt	]" -- Neither greater than nor less than (EPO)	-->
<!ENTITY ni	SDATA "[ni	]" -- Contains	-->
<!ENTITY nLE	SDATA "[nLE	]" -- Neither less than nor double equal to	-->
<!ENTITY nle	SDATA "[nle	]" -- Neither less than nor equal to	-->
<!ENTITY nlt	SDATA "[nlt	]" -- Not less than	-->
<!ENTITY nltneq	SDATA "[nltneq	]" -- Neither less than nor equivalent to (EPO)	-->
<!ENTITY nltngt	SDATA "[nltngt	]" -- Neither less than nor greater than (EPO)	-->
<!ENTITY notin	SDATA "[notin	]" -- Negated set membership; is not an element of	-->
<!ENTITY notni	SDATA "[notni	]" -- Does not contain, negated contains	-->
<!ENTITY npar	SDATA "[npar	]" -- Not parallel to	-->
<!ENTITY nrarr	SDATA "[nrarr	]" -- Not right arrow; does not tend to	-->
<!ENTITY nsim	SDATA "[nsim	]" -- Not similar; not equivalent to	-->
<!ENTITY nsime	SDATA "[nsime	]" -- Not similar, equals; not asymptotically equal to	-->

<!ENTITY nsub	SDATA "[nsub	]" --	Not subset; non-proper inclusion in set -->
<!ENTITY nsube	SDATA "[nsube	]" --	Not subset, equals; not contained as a subclass in a set -->
<!ENTITY nsup	SDATA "[nsup	]" --	Not superset; does not properly include -->
<!ENTITY nsupe	SDATA "[nsupe	]" --	Not superset, equals; does not contain as subset -->
<!ENTITY nu	SDATA "[nu	]" --	Small nu, Greek -->
<!ENTITY numsp	SDATA "[numsp	]" --	Numeric space (width of a number)-->
<!ENTITY nwarr	SDATA "[nwarr	]" --	Upward left-pointing arrow (north west) -->
<!ENTITY Oacute	SDATA "[Oacute	]" --	Capital O acute -->
<!ENTITY oacute	SDATA "[oacute	]" --	Small o acute -->
<!ENTITY Ocirc	SDATA "[Ocirc	]" --	Capital O circumflex -->
<!ENTITY odot	SDATA "[odot	]" --	Middle dot in circle; tensor product -->
<!ENTITY Ograve	SDATA "[Ograve	]" --	Capital O grave -->
<!ENTITY Omega	SDATA "[Omega	]" --	Capital omega, Greek -->
<!ENTITY omega	SDATA "[omega	]" --	Small omega, Greek -->
<!ENTITY omicron	SDATA "[omicron	]" --	Small omicron Greek (EPO) -->
<!ENTITY ominus	SDATA "[ominus	]" --	Minus sign in circle; symmetric difference -->
<!ENTITY oplus	SDATA "[oplus	]" --	Plus sign in circle, direct sum, earth sign -->
<!ENTITY or	SDATA "[or	]" --	Logical OR -->
<!ENTITY ordf	SDATA "[ordf	]" --	Ordinal indicator, feminine (small a underscore) -->
<!ENTITY ordm	SDATA "[ordm	]" --	Ordinal indicator, masculine (small o underscore)-->
<!ENTITY origof	SDATA "[origof	]" --	Original of -->
<!ENTITY Oslash	SDATA "[Oslash	]" --	Capital O, slash -->
<!ENTITY oslash	SDATA "[oslash	]" --	Small o, slash -->
<!ENTITY osol	SDATA "[osol	]" --	Diameter -->
<!ENTITY Otilde	SDATA "[Otilde	]" --	Capital O tilde -->
<!ENTITY otilde	SDATA "[otilde	]" --	Small o tilde -->
<!ENTITY otimes	SDATA "[otimes	]" --	Multiply sign in circle; direct product -->
<!ENTITY overbar	SDATA "[overbar	]" --	Overscore (EPO) -->
<!ENTITY Overbar	SDATA "[Overbar	]" --	Double overscore (EPO) -->
<!ENTITY par	SDATA "[par	]" --	Parallel to -->
<!ENTITY para	SDATA "[para	]" --	Paragraph sign -->
<!ENTITY parl	SDATA "[parl	]" --	Parallelogram (EPO) -->
<!ENTITY part	SDATA "[part	]" --	Partial differential -->
<!ENTITY permil	SDATA "[permil	]" --	Per mille -->
<!ENTITY perp	SDATA "[perp	]" --	Perpendicular; orthogonal -->
<!ENTITY peseta	SDATA "[peseta	]" --	Peseta (EPO) -->
<!ENTITY Phi	SDATA "[Phi	]" --	Capital phi, Greek -->
<!ENTITY phis	SDATA "[phis	]" --	Small phi, Greek; straight phi -->
<!ENTITY phiv	SDATA "[phiv	]" --	Curly, or open phi -->
<!ENTITY Pi	SDATA "[Pi	]" --	Capital pi, Greek -->
<!ENTITY pi	SDATA "[pi	]" --	Small pi, Greek -->
<!ENTITY planck	SDATA "[planck	]" --	Planck's 2pi -->
<!ENTITY plusdo	SDATA "[plusdo	]" --	Plus sign, dot above; direct sum -->
<!ENTITY pr	SDATA "[pr	]" --	Precedes; is dominated by; has a lower rank than -->
<!ENTITY Prime	SDATA "[Prime	]" --	Double prime -->
<!ENTITY prime	SDATA "[prime	]" --	Single prime -->
<!ENTITY prsim	SDATA "[prsim	]" --	Precedes, similar; dominance -->
<!ENTITY prurel	SDATA "[prurel	]" --	Precedes under relation -->
<!ENTITY Psi	SDATA "[Psi	]" --	Capital psi, Greek -->
<!ENTITY psi	SDATA "[psi	]" --	Small psi, Greek -->
<!ENTITY radic	SDATA "[radic	]" --	Radical -->
<!ENTITY rang	SDATA "[rang	]" --	Right angle bracket -->
<!ENTITY rArr	SDATA "[rArr	]" --	Implies -->
<!ENTITY rarr	SDATA "[rarr	]" --	Right arrow; approaches -->
<!ENTITY Rarr	SDATA "[Rarr	]" --	Two headed right arrow; on to map-->
<!ENTITY rarrhk	SDATA "[rarrhk	]" --	Right arrow, hooked; curved arrow-->
<!ENTITY rarrw	SDATA "[rarrw	]" --	Right arrow wavy; functional relationship-->
<!ENTITY rdurule	SDATA "[rdurule	]" --	Right - and +45 degree rule (EPO)-->
<!ENTITY rect	SDATA "[rect	]" --	Rectangle -->
<!ENTITY reg	SDATA "[reg	]" --	Registered trade mark -->
<!ENTITY rhdurule	SDATA "[rhdurule	]" --	Right horizontal, - and +45 degree rule (EPO)-->

<!ENTITY rho	SDATA "[rho	]" --	Small rho, Greek	-->
<!ENTITY rlarr2	SDATA "[rlarr2	]" --	Right arrow over left arrow	-->
<!ENTITY rparstr	SDATA "[rparstr	]" --	Right parenthesis, stroke (EPO)	-->
<!ENTITY rsqbstr	SDATA "[rsqbstr	]" --	Right square bracket, stroke (EPO)	-->
<!ENTITY rx	SDATA "[rx	]" --	Pharmaceutical prescription (Rx)	-->
<!ENTITY sbplus	SDATA "[sbplus	]" --	Subscript plus (EPO)	-->
<!ENTITY sc	SDATA "[sc	]" --	Succeeds; has a higher rank than	-->
<!ENTITY sccue	SDATA "[sccue	]" --	Contains or is equal to	-->
<!ENTITY sec	SDATA "[sec	]" --	Seconds (EPO)	-->
<!ENTITY sect	SDATA "[sect	]" --	Section sign	-->
<!ENTITY shy	SDATA "[shy	]" --	Syllable hyphen	-->
<!ENTITY Sigma	SDATA "[Sigma	]" --	Capital sigma, Greek	-->
<!ENTITY sigma	SDATA "[sigma	]" --	Small sigma, Greek	-->
<!ENTITY sim	SDATA "[sim	]" --	Similar	-->
<!ENTITY sime	SDATA "[sime	]" --	Similar, equals	-->
<!ENTITY sinew	SDATA "[sinew	]" --	Sine wave (EPO)	-->
<!ENTITY sl0	SDATA "[sl0	]" --	Slash zero	-->
<!ENTITY spplus	SDATA "[spplus	]" --	Superscript plus (EPO)	-->
<!ENTITY sqsub	SDATA "[sqsub	]" --	Square subset; image of	-->
<!ENTITY sqsup	SDATA "[sqsup	]" --	Square superset; original of	-->
<!ENTITY squ	SDATA "[squ	]" --	Square, open	-->
<!ENTITY squf	SDATA "[squf	]" --	Square, filled; end of proof; Halmos	-->
<!ENTITY squslash	SDATA "[squslash	]" --	Square, slash; cancelled box (EPO)	-->
<!ENTITY sub	SDATA "[sub	]" --	Subset or is implied by	-->
<!ENTITY sub0	SDATA "[sub0	]" --	Subscript 0 (EPO)	-->
<!ENTITY sub1	SDATA "[sub1	]" --	Subscript 1 (EPO)	-->
<!ENTITY sub2	SDATA "[sub2	]" --	Subscript 2 (EPO)	-->
<!ENTITY sub3	SDATA "[sub3	]" --	Subscript 3 (EPO)	-->
<!ENTITY sub4	SDATA "[sub4	]" --	Subscript 4 (EPO)	-->
<!ENTITY sub5	SDATA "[sub5	]" --	Subscript 5 (EPO)	-->
<!ENTITY sub6	SDATA "[sub6	]" --	Subscript 6 (EPO)	-->
<!ENTITY sub7	SDATA "[sub7	]" --	Subscript 7 (EPO)	-->
<!ENTITY sub8	SDATA "[sub8	]" --	Subscript 8 (EPO)	-->
<!ENTITY sub9	SDATA "[sub9	]" --	Subscript 9 (EPO)	-->
<!ENTITY sube	SDATA "[sube	]" --	Subset, equals	-->
<!ENTITY submin	SDATA "[submin	]" --	Subscript minus (EPO)	-->
<!ENTITY subnE	SDATA "[subnE	]" --	Subset, not double equals; is strictly included in set	-->
<!ENTITY sum	SDATA "[sum	]" --	Summation operator	-->
<!ENTITY sup	SDATA "[sup	]" --	Superset or implies	-->
<!ENTITY sup0	SDATA "[sup0	]" --	Superscript 0 (EPO)	-->
<!ENTITY sup1	SDATA "[sup1	]" --	Superscript 1	-->
<!ENTITY sup3	SDATA "[sup3	]" --	Superscript 3	-->
<!ENTITY sup4	SDATA "[sup4	]" --	Superscript 4 (EPO)	-->
<!ENTITY sup5	SDATA "[sup5	]" --	Superscript 5 (EPO)	-->
<!ENTITY sup6	SDATA "[sup6	]" --	Superscript 6 (EPO)	-->
<!ENTITY sup7	SDATA "[sup7	]" --	Superscript 7 (EPO)	-->
<!ENTITY sup8	SDATA "[sup8	]" --	Superscript 8 (EPO)	-->
<!ENTITY sup9	SDATA "[sup9	]" --	Superscript 9 (EPO)	-->
<!ENTITY supa	SDATA "[supa	]" --	Superscript a (EPO)	-->
<!ENTITY supand	SDATA "[supand	]" --	Superscript and (EPO)	-->
<!ENTITY supcomma	SDATA "[supcomma	]" --	Superscript comma (EPO)	-->
<!ENTITY supe	SDATA "[supe	]" --	Superset; equals	-->
<!ENTITY supmin	SDATA "[supmin	]" --	Superscript minus (EPO)	-->
<!ENTITY szlig	SDATA "[szlig	]" --	Small s sharp	-->
<!ENTITY tau	SDATA "[tau	]" --	Small tau, Greek	-->
<!ENTITY there4	SDATA "[there4	]" --	Therefore	-->
<!ENTITY Theta	SDATA "[Theta	]" --	Capital theta, Greek	-->
<!ENTITY thetas	SDATA "[thetas	]" --	Small theta, Greek	-->
<!ENTITY thetav	SDATA "[thetav	]" --	Curly or open theta	-->
<!ENTITY THORN	SDATA "[THORN	]" --	Capital Thorn, Icelandic	-->
<!ENTITY thorn	SDATA "[thorn	]" --	Small thorn, Icelandic	-->
<!ENTITY times	SDATA "[times	]" --	Multiply sign	-->
<!ENTITY tint	SDATA "[tint	]" --	Triple integral	-->
<!ENTITY tprime	SDATA "[tprime	]" --	Triple prime	-->
<!ENTITY trade	SDATA "[trade	]" --	Trademark	-->
<!ENTITY Uacute	SDATA "[Uacute	]" --	Capital U acute	-->
<!ENTITY uacute	SDATA "[uacute	]" --	Small u acute	-->
<!ENTITY uArr	SDATA "[uArr	]" --	Up double arrow	-->
<!ENTITY uarr	SDATA "[uarr	]" --	Upward arrow; increases; exponent	-->
<!ENTITY Ucirc	SDATA "[Ucirc	]" --	Capital U circumflex	-->
<!ENTITY Ugrave	SDATA "[Ugrave	]" --	Capital U grave	-->

<!ENTITY uharl	SDATA "[uharl	]" --	Up harpoon-left	-->
<!ENTITY uint	SDATA "[uint	]" --	Upper integral (EPO)	-->
<!ENTITY uml	SDATA "[uml	]" --	Umlaut	-->
<!ENTITY Upsi	SDATA "[Upsi	]" --	Capital upsilon, Greek	-->
<!ENTITY upsi	SDATA "[upsi	]" --	Small upsilon, Greek	-->
<!ENTITY utri	SDATA "[utri	]" --	Up triangle	-->
<!ENTITY utrif	SDATA "[utrif	]" --	Up triangle, filled	-->
<!ENTITY varr	SDATA "[varr	]" --	Up and down arrow; vertical relationship	-->
<!ENTITY vArr	SDATA "[vArr	]" --	Up and down double arrow	-->
<!ENTITY vdash	SDATA "[vdash	]" --	Vertical dash; assertion; reduced to; implies	-->
<!ENTITY vDash	SDATA "[vDash	]" --	Vertical, double dash; models; statement is true (result in)	-->
<!ENTITY vltri	SDATA "[vltri	]" --	Left triangle open, variant; implied by	-->
<!ENTITY vprop	SDATA "[vprop	]" --	Proportional, variant	-->
<!ENTITY vrtri	SDATA "[vrtri	]" --	Right triangle open, variant; implies	-->
<!ENTITY vsupnE	SDATA "[vsupnE	]" --	Superset, not double equals, variant; strictly includes in set	-->
<!ENTITY wedgeq	SDATA "[wedgeq	]" --	Estimates; corresponds to	-->
<!ENTITY weierp	SDATA "[weierp	]" --	Weierstrass elliptical function, p	-->
<!ENTITY Xi	SDATA "[Xi	]" --	Capital xi, Greek	-->
<!ENTITY xi	SDATA "[xi	]" --	Small xi, Greek	-->
<!ENTITY Yacute	SDATA "[Yacute	]" --	Capital Y acute	-->
<!ENTITY yacute	SDATA "[yacute	]" --	Small y acute	-->
<!ENTITY yen	SDATA "[yen	]" --	Yen	-->
<!ENTITY zeta	SDATA "[zeta	]" --	Small zeta, Greek	-->

ANNEX 3 - WIPO ST.32 SPECIAL CHARACTER ENTITY REFERENCES

As explained in the introduction wherever possible entity references for characters not in the code page have been taken from published ISO entity references. However, a few characters are neither in the code page nor in the ISO entity sets. WIPO ST.32 assigns entity names to these characters and these are given in the table below (they are also included in the main entity reference table above). These entities are referenced in the DTD, in WIPO ST.32, with the entity name "%patspent;" and with SYSTEM reference "patspent.ent" .

<!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 guild	SDATA "[guild	]" --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	-->
<!ENTITY lparstr	SDATA "[lparstr	]" --Left parenthesis, stroke	-->
<!ENTITY lsqbstr	SDATA "[lsqbstr	]" --Left square bracket, stroke	-->
<!ENTITY min	SDATA "[min	]" --Minutes	-->
<!ENTITY ngtneg	SDATA "[ngtneg	]" --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 nor greater than	-->
<!ENTITY omicron	SDATA "[omicron	]" --Small omicron Greek	-->
<!ENTITY overbar	SDATA "[overbar	]" --Overscore	-->
<!ENTITY Overbar	SDATA "[Overbar	]" --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	-->
<!ENTITY rparstr	SDATA "[rparstr	]" --Right parenthesis, stroke	-->
<!ENTITY rsqbstr	SDATA "[rsqbstr	]" --Right square bracket, stroke	-->
<!ENTITY sbplus	SDATA "[sbplus	]" --Subscript plus	-->
<!ENTITY sec	SDATA "[sec	]" --Seconds	-->
<!ENTITY sinew	SDATA "[sinew	]" --Sinus wave	-->
<!ENTITY sl0	SDATA "[sl0	]" --Slash zero	-->
<!ENTITY spplus	SDATA "[spplus	]" --Superscript plus	-->
<!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	-->
<!ENTITY sup0	SDATA "[sup0	]" --Superscript 0	-->
<!ENTITY sup4	SDATA "[sup4	]" --Superscript 4	-->
<!ENTITY sup5	SDATA "[sup5	]" --Superscript 5	-->
<!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 uint	SDATA "[uint	]" --Upper integral	-->

**** End of document ****