

Appendix F Special Characters

The special characters have been split into the following sections:

- ❑ Character Entity References for ISO 8859-1 Characters
- ❑ Character Entity References for Symbols, Mathematical Symbols, and Greek Letters
- ❑ Character Entity References for Markup-Significant and Internationalization Characters

They are taken from the W3C website at www.w3.org/TR/REC-html40/sgml/entities.html.

Character Entity References for ISO 8859-1 Characters

Symbol	Description	Entity Name	Number Code
	No-break space = non-breaking space	 	
¡	Inverted exclamation mark	¡	¡
¢	Cent sign	¢	¢
£	Pound sign	£	£
¤	Currency sign	¤	¤
¥	Yen sign = yuan sign	¥	¥
¦	Broken bar = broken vertical bar	¦	¦
§	Section sign	§	§
¨	Diaeresis = spacing diaeresis	¨	¨
©	Copyright sign	©	©
ª	Feminine ordinal indicator	ª	ª
«	Left-pointing double angle quotation mark = left-pointing guillemet	«	«
¬	Not sign	¬	¬
–	Soft hyphen = discretionary hyphen	­	­
®	Registered sign = registered trademark sign	®	®
ˉ	Macron = spacing macron = overline = APL overbar	¯	¯
°	Degree sign	°	°
±	Plus-minus sign = plus-or-minus sign	±	±
²	Superscript two = superscript digit two = squared	²	²

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Symbol	Description	Entity Name	Number Code
³	Superscript three = superscript digit three = cubed	³	³
´	Acute accent = spacing acute	´	´
µ	Micro sign	µ	µ
¶	Pilcrow sign = paragraph sign	¶	¶
·	Middle dot = Georgian comma = Greek middle dot	·	·
¸	Cedilla = spacing cedilla	¸	¸
¹	Superscript one = superscript digit one	¹	¹
º	Masculine ordinal indicator	º	º
»	Right-pointing double angle quotation mark = right pointing guillemet	»	»
¼	Vulgar fraction one-quarter = fraction one-quarter	¼	¼
½	Vulgar fraction one-half = fraction one-half	½	½
¾	Vulgar fraction three-quarters = fraction three-quarters	¾	¾
¿	Inverted question mark = turned question mark	¿	¿
À	Latin capital letter A with grave = Latin capital letter A grave	À	À
Á	Latin capital letter A with acute	Á	Á
Â	Latin capital letter A with circumflex	Â	Â
Ã	Latin capital letter A with tilde	Ã	Ã
Ä	Latin capital letter A with diaeresis	Ä	Ä
Å	Latin capital letter A with ring above = Latin capital letter A ring	Å	Å
Æ	Latin capital letter AE = Latin capital ligature AE	Æ	Æ
Ç	Latin capital letter C with cedilla	Ç	Ç
È	Latin capital letter E with grave	È	È
É	Latin capital letter E with acute	É	É
Ê	Latin capital letter E with circumflex	Ê	Ê

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Symbol	Description	Entity Name	Number Code
Ë	Latin capital letter E with diaeresis	Ë	Ë
Ì	Latin capital letter I with grave	Ì	Ì
Í	Latin capital letter I with acute	Í	Í
Î	Latin capital letter I with circumflex	Î	Î
Ï	Latin capital letter I with diaeresis	Ï	Ï
Ð	Latin capital letter ETH	Ð	Ð
Ñ	Latin capital letter N with tilde	Ñ	Ñ
Ò	Latin capital letter O with grave	Ò	Ò
Ó	Latin capital letter O with acute	Ó	Ó
Ô	Latin capital letter O with circumflex	Ô	Ô
Õ	Latin capital letter O with tilde	Õ	Õ
Ö	Latin capital letter O with diaeresis	Ö	Ö
×	Multiplication sign	×	×
Ø	Latin capital letter O with stroke = Latin capital letter O slash	Ø	Ø
Ù	Latin capital letter U with grave	Ù	Ù
Ú	Latin capital letter U with acute	Ú	Ú
Û	Latin capital letter U with circumflex	Û	Û
Ü	Latin capital letter U with diaeresis	Ü	Ü
Ý	Latin capital letter Y with acute	Ý	Ý
Þ	Latin capital letter THORN	Þ	Þ
ß	Latin small letter sharp s = ess-zed	ß	ß
à	Latin small letter a with grave = Latin small letter a grave	à	à
á	Latin small letter a with acute	á	á
â	Latin small letter a with circumflex	â	â

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Symbol	Description	Entity Name	Number Code
ã	Latin small letter a with tilde	ã	ã
ä	Latin small letter a with diaeresis	ä	ä
å	Latin small letter a with ring above = Latin small letter a ring	å	å
æ	Latin small letter ae = Latin small ligature ae	æ	æ
ç	Latin small letter c with cedilla	ç	ç
è	Latin small letter e with grave	è	è
é	Latin small letter e with acute	é	é
ê	Latin small letter e with circumflex	ê	ê
ë	Latin small letter e with diaeresis	ë	ë
ì	Latin small letter i with grave	ì	ì
í	Latin small letter i with acute	í	í
î	Latin small letter i with circumflex	î	î
ï	Latin small letter i with diaeresis	ï	ï
ð	Latin small letter eth	ð	ð
ñ	Latin small letter n with tilde	ñ	ñ
ò	Latin small letter o with grave	ò	ò
ó	Latin small letter o with acute	ó	ó
ô	Latin small letter o with circumflex	ô	ô
õ	Latin small letter o with tilde	õ	õ
ö	Latin small letter o with diaeresis	ö	ö
÷	Division sign	÷	÷
ø	Latin small letter o with stroke = Latin small letter o slash	ø	ø
ù	Latin small letter u with grave	ù	ù
ú	Latin small letter u with acute	ú	ú
û	Latin small letter u with circumflex	û	û

(continued)

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Symbol	Description	Entity Name	Number Code
ü	Latin small letter u with diaeresis	ü	ü
ý	Latin small letter y with acute	ý	ý
þ	Latin small letter thorn	þ	þ
ÿ	Latin small letter y with diaeresis	ÿ	ÿ

Character Entity References for Symbols, Mathematical Symbols, and Greek Letters

Symbol	Description	Entity Name	Number Code
Latin Extended-B			
f	Latin small f with hook = function = florin	ƒ	ƒ
Greek			
A	Greek capital letter alpha	Α	Α
B	Greek capital letter beta	Β	Β
Γ	Greek capital letter gamma	Γ	Γ
Δ	Greek capital letter delta	Δ	Δ
E	Greek capital letter epsilon	Ε	Ε
Z	Greek capital letter zeta	Ζ	Ζ
H	Greek capital letter eta	Η	Η
Θ	Greek capital letter theta	Θ	Θ
I	Greek capital letter iota	Ι	Ι
K	Greek capital letter kappa	Κ	Κ
Λ	Greek capital letter lambda	Λ	Λ
M	Greek capital letter mu	&Mu	Μ
N	Greek capital letter nu	Ν	Ν

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Symbol	Description	Entity Name	Number Code
Ξ	Greek capital letter xi	Ξ	Ξ
Ο	Greek capital letter omicron	Ο	Ο
Π	Greek capital letter pi	Π	Π
Ρ	Greek capital letter rho	Ρ	Ρ
Σ	Greek capital letter sigma	Σ	Σ
Τ	Greek capital letter tau	Τ	Τ
Υ	Greek capital letter upsilon	Υ	Υ
Φ	Greek capital letter phi	Φ	Φ
Χ	Greek capital letter chi	Χ	Χ
Ψ	Greek capital letter psi	Ψ	Ψ
Ω	Greek capital letter omega	Ω	Ω
α	Greek small letter alpha	α	α
β	Greek small letter beta	β	β
γ	Greek small letter gamma	γ	γ
δ	Greek small letter delta	δ	δ
ε	Greek small letter epsilon	ε	ε
ζ	Greek small letter zeta	ζ	ζ
η	Greek small letter eta	η	η
θ	Greek small letter theta	θ	θ
ι	Greek small letter iota	ι	ι
κ	Greek small letter kappa	κ	κ
λ	Greek small letter lambda	λ	λ
μ	Greek small letter mu	μ	μ
ν	Greek small letter nu	ν	ν
ξ	Greek small letter xi	ξ	ξ
ο	Greek small letter omicron	ο	ο

(continued)

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Symbol	Description	Entity Name	Number Code
π	Greek small letter pi	π	π
ρ	Greek small letter rho	ρ	ρ
ς	Greek small letter final sigma	ς	ς
σ	Greek small letter sigma	σ	σ
τ	Greek small letter tau	τ	τ
υ	Greek small letter upsilon	υ	υ
φ	Greek small letter phi	φ	φ
χ	Greek small letter chi	χ	χ
ψ	Greek small letter psi	ψ	ψ
ω	Greek small letter omega	ω	ω
θ	Greek small letter theta symbol	ϑ	ϑ
Υ	Greek upsilon with hook symbol	ϒ	ϒ
ϖ	Greek pi symbol	ϖ	ϖ
General Punctuation			
•	Bullet = black small circle	•	•
...	Horizontal ellipsis = three dot leader	…	…
'	Prime = minutes = feet	′	′
"	Double prime = seconds = inches	″	″
—	Overline = spacing overscore	‾	‾
/	Fraction slash	⁄	⁄
Letterlike Symbols			
ℙ	Script capital P = power set = Weierstrass p	℘	℘
ℑ	Blackletter capital I = imaginary part	ℑ	ℑ
ℜ	Blackletter capital R = real part symbol	ℜ	ℜ
™	Trademark sign	™	™

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Symbol	Description	Entity Name	Number Code
\aleph	Alef symbol = first transfinite cardinal	<code>&alefsym;</code>	<code>&#8501;</code>
Arrows			
\leftarrow	Left arrow	<code>&larr;</code>	<code>&#8592;</code>
\uparrow	Up arrow	<code>&uarr;</code>	<code>&#8593;</code>
\rightarrow	Right arrow	<code>&rarr;</code>	<code>&#8594;</code>
\downarrow	Down arrow	<code>&darr;</code>	<code>&#8595;</code>
\leftrightarrow	Left-right arrow	<code>&harr;</code>	<code>&#8596;</code>
\lrcorner	Down arrow with corner leftward = carriage return	<code>&crarr;</code>	<code>&#8629;</code>
\Leftrightarrow	Left double arrow	<code>&lArr;</code>	<code>&#8656;</code>
\Uparrow	Up double arrow	<code>&uArr;</code>	<code>&#8657;</code>
\Rightarrow	Right double arrow	<code>&rArr;</code>	<code>&#8658;</code>
\Downarrow	Down double arrow	<code>&dArr;</code>	<code>&#8659;</code>
\Leftrightarrow	Left-right double arrow	<code>&hArr;</code>	<code>&#8660;</code>
Mathematical Operators			
\forall	For all	<code>&forall;</code>	<code>&#8704;</code>
∂	Partial differential	<code>&part;</code>	<code>&#8706;</code>
\exists	There exists	<code>&exist;</code>	<code>&#8707;</code>
\emptyset	Empty set = null set = diameter	<code>&empty;</code>	<code>&#8709;</code>
∇	Nabla = backward difference	<code>&nabla;</code>	<code>&#8711;</code>
\in	Element of	<code>&isin;</code>	<code>&#8712;</code>
\notin	Not an element of	<code>&notin;</code>	<code>&#8713;</code>
\ni	Contains as member	<code>&ni;</code>	<code>&#8715;</code>
\prod	n-ary product = product sign	<code>&prod;</code>	<code>&#8719;</code>
\sum	n-ary summation	<code>&sum;</code>	<code>&#8721;</code>

(continued)

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Symbol	Description	Entity Name	Number Code
–	Minus sign	−	−
*	Asterisk operator	∗	∗
√	Square root = radical sign	√	√
∝	Proportional to	∝	∝
∞	Infinity	∞	∞
∠	Angle	∠	∠
∧	Logical and = wedge	∧	∧
∨	Logical or = vee	&or ;	∨
∩	Intersection = cap	∩	∩
∪	Union = cup	∪	∪
∫	Integral	∫	∫
∴	Therefore	∴	∴
~	Tilde operator = varies with = similar to	∼	∼
≈	Approximately equal to	≅	≅
≈	Almost equal to = asymptotic to	≈	≈
≠	Not equal to	≠	≠
≡	Identical to	≡	≡
≤	Less than or equal to	≤	≤
≥	Greater than or equal to	≥	≥
⊂	Subset of	⊂	⊂
⊃	Superset of	⊃	⊃
⊄	Not a subset of	⊅	⊄
⊆	Subset of or equal to	⊆	⊆
⊇	Superset of or equal to	⊇	⊇
⊕	Circled plus = direct sum	⊕	⊕
⊗	Circled times = vector product	⊗	⊗

Symbol	Description	Entity Name	Number Code
⊥	Up tack = orthogonal to = perpendicular	⊥	⊥
·	Dot operator	⋅	⋅
Miscellaneous Technical			
⌈	Left ceiling = apl upstile	⌈	⌈
⌋	Right ceiling	⌉	⌉
⌊	Left floor = apl downstile	⌊	⌊
⌋	Right floor	⌋	⌋
⟨	Left-pointing angle bracket = bra	⟨	〈
⟩	Right-pointing angle bracket = ket	⟩	〉
Geometric Shape			
◊	Lozenge	◊	◊
Miscellaneous Symbols			
♠	Black spade suit	♠	♠
♣	Black club suit = shamrock	♣	♣
♥	Black heart suit = valentine	♥	♥
♦	Black diamond suit	♦	♦

Markup-Significant and Internationalization Characters

Symbol	Description	Entity Name	Number Code
"	Quotation mark = APL quote	"	"
&	Ampersand	&	&
<	Less-than sign	<	<
>	Greater-than sign	>	>

(continued)

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Symbol	Description	Entity Name	Number Code
Œ	Latin capital ligature OE	Œ	Œ
œ	Latin small ligature oe	œ	œ
Š	Latin capital letter S with caron	Š	Š
š	Latin small letter s with caron	š	š
Ÿ	Latin capital letter Y with diaeresis	Ÿ	Ÿ
Spacing Modifiers			
^	Modifier letter circumflex accent	ˆ	ˆ
~	Small tilde	˜	˜
General Punctuation			
	En space	 	 
	Em space	 	 
	Thin space	 	 
␣	Zero width non-joiner	‌	‌
␤	Zero width joiner	‍	‍
↲	Left-to-right mark	‎	‎
↱	Right-to-left mark	‏	‏
—	En dash	–	–
—	Em dash	—	—
’	Left single quotation mark	‘	‘
’	Right single quotation mark	’	’
‚	Single low-9 quotation mark	‚	‚
“	Left double quotation mark	&lquo;	“
”	Right double quotation mark	&rquo;	”
„	Double low-9 quotation mark	„	„
†	Dagger	†	†
‡	Double dagger	‡	‡

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Symbol	Description	Entity Name	Number Code
‰	Per mille sign	‰	‰
‹	Single left-pointing angle quotation mark (proposed, but not yet standardized)	&lquo;	‹
›	Single right-pointing angle quotation mark (proposed, but not yet standardized)	&rquo;	›
€	Euro sign	€	€