

Information and documentation — Hebrew alphabet coded character sets for bibliographic information interchange

1 Scope

1.1 This International Standard specifies two coded Hebrew character sets.

- a) Set 1: 78 characters including 74 basic characters needed in Hebrew texts, three ligatures used only in the Yiddish language, and one point used only in the Judeo-Spanish language.
- b) Set 2: 51 additional characters used in combination with basic characters in some older Hebrew texts.

1.2 These sets are intended for the international interchange of bibliographic citations, including their annotations, in the Hebrew alphabet. The sets may be used in a 7-bit or an 8-bit environment in accordance with ISO 2022.

1.3 These character sets are intended to handle information in the following languages: Old and Modern Hebrew, Yiddish, Ladino/Judezmo (Judeo-Spanish); and other languages written in Hebrew script, such as Judeo-Arabic, Judeo-Persian, Karaite Turkic, Judeo-Italian, Judeo-Greek, etc.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 646:1991, *Information technology — ISO 7-bit coded character set for information interchange.*

ISO/IEC 2022:1994, *Information technology — Character code structure and extension techniques.*

*International register of character sets to be identified by means of escape sequences.*¹⁾

3 Implementation

3.1 The implementation of these coded character sets in physical media and for transmission, taking into account the need for error checking, is the subject of other International Standards (see annex A).

3.2 The implementation of this International Standard is in accordance with the provisions of ISO/IEC 2022²⁾ and is identified by escape sequences. (To be assigned.)

3.3 The unassigned positions in the code table shall not be utilized in the international interchange of bibliographic information.

1) Available on application to the Secretariat of the Registration Authority: ECMA, 114 rue du Rhône, CH-1204 Genève, Switzerland.

2) G0: ESC 2/8 F; G1: ESC 2/9 F; G2: ESC 2/10 F; G3: ESC 2/11 F ("F" represents the final character of the escape sequence).

4 Code tables

4.1 Code table for the basic Hebrew alphabet

Table 1 is the code table for characters constituting the basic Hebrew alphabet.

Table 1

					b ₇	0	0	0	0	1	1	1	1
					b ₆	0	0	1	1	0	0	1	1
					b ₅	0	1	0	1	0	1	0	1
b ₄	b ₃	b ₂	b ₁		0	1	2	3	4	5	6	7	
0	0	0	0	0				0	◻		א	נ	
0	0	0	1	1			!	1	◻		ב	ס	
0	0	1	0	2			"	2	◻		ג	ע	
0	0	1	1	3			#	3	◻		ד	ף	
0	1	0	0	4			\$	4	◻		ה	פ	
0	1	0	1	5			%	5	◻		ו	ץ	
0	1	1	0	6			&	6	◻		ז	צ	
0	1	1	1	7			'	7	◻		ח	ק	
1	0	0	0	8			)	8	◻		ט	ך	
1	0	0	1	9			(	9	◻		י	ש	
1	0	1	0	A			*	:	◻		ך	ת	
1	0	1	1	B			+	;	◻	]	כ	ו	
1	1	0	0	C			,	>	◻		ל	ו	
1	1	0	1	D			-	=	◻	[	ם	י	
1	1	1	0	E			.	<	◻		ם		
1	1	1	1	F			/	?			ן		

Reserved for future standardization

4.2 Code table for additional Hebrew characters

Table 2 is the code table for additional Hebrew script characters.

Table 2

					b ₇	0	0	0	0	1	1	1	1
					b ₆	0	0	1	1	0	0	1	1
					b ₅	0	1	0	1	0	1	0	1
b ₄	b ₃	b ₂	b ₁		0	1	2	3	4	5	6	7	
0	0	0	0	0					א	ב	ג	ד	
0	0	0	1	1			ה		ו	ז	ח	ט	
0	0	1	0	2			י		כ	ל	מ	נ	
0	0	1	1	3					ס	ע	פ	צ	
0	1	0	0	4					ק	ר	ש	ת	
0	1	0	1	5					ך	ץ	ף	ץ	
0	1	1	0	6					ם	ן	ס	ץ	
0	1	1	1	7					ף	ץ	ף	ץ	
1	0	0	0	8					ך	ץ		ץ	
1	0	0	1	9					ם	ן			
1	0	1	0	A					ס	ע			
1	0	1	1	B					ף	ץ			
1	1	0	0	C					ך	ץ			
1	1	0	1	D					ם	ן			
1	1	1	0	E					ף	ץ			
1	1	1	1	F					ך	ץ			

Reserved for future standardization

5 Legend

5.1 Basic Hebrew alphabet

Table 3 gives the code, graphic and name of each character constituting the basic Hebrew alphabet. Comments on usage are also provided when needed.

Table 3 - Set 1: Basic Hebrew alphabet

Code	Graphic	Name	Comments
20		SPACE	
21	!	EXCLAMATION MARK	
22	"	HEBREW PUNCTUATION GERSHAYIM	
23	#	NUMBER SIGN	
24	\$	DOLLAR SIGN	
25	%	PERCENT SIGN	
26	&	AMPERSAND	
27	'	HEBREW PUNCTUATION GERESH	
28	)	OPENING PARENTHESIS	
29	(	CLOSING PARENTHESIS	
2A	*	ASTERISK	
2B	+	PLUS SIGN	
2C	,	HEBREW COMMA	
2D	-	HEBREW PUNCTUATION MAQAF	
2E	.	PERIOD	
2F	/	SLASH	
30	0	DIGIT ZERO	
31	1	DIGIT ONE	
32	2	DIGIT TWO	
33	3	DIGIT THREE	
34	4	DIGIT FOUR	
35	5	DIGIT FIVE	
36	6	DIGIT SIX	
37	7	DIGIT SEVEN	
38	8	DIGIT EIGHT	
39	9	DIGIT NINE	
3A	:	HEBREW PUNCTUATION SOF PASUQ	
3B	;	SEMICOLON	
3C	>	OPENING ANGLE BRACKET	
3D	=	EQUALS SIGN	
3E	<	CLOSING ANGLE BRACKET	
3F	?	QUESTION MARK	

Table 3 (continued)

Code	Graphic	Name	Comments
40	◻	HEBREW POINT PATAH	
41	◻̣	HEBREW POINT QAMATS	
42	◻̣̣	HEBREW POINT SEGOL	
43	◻̣̣̣	HEBREW POINT TSERE	
44	◻̣̣̣̣	HEBREW POINT HIRIQ	
45	◻̣̣̣̣̣	HEBREW POINT SIN DOT	
46	◻̣̣̣̣̣̣	HEBREW POINT QUBUTS	
47	◻̣̣̣̣̣̣̣	HEBREW POINT SHEVA	
48	◻̣̣̣̣̣̣̣̣	HEBREW POINT HATAF PATAH	
49	◻̣̣̣̣̣̣̣̣̣	HEBREW POINT HATAF QAMATS	
4A	◻̣̣̣̣̣̣̣̣̣̣	HEBREW POINT HATAF SEGOL	
4B	◻̣̣̣̣̣̣̣̣̣̣̣	HEBREW POINT DAGESH OR MAPIQ	
4C	◻̣̣̣̣̣̣̣̣̣̣̣̣	HEBREW POINT RAFE	
4D	◻̣̣̣̣̣̣̣̣̣̣̣̣̣	HEBREW POINT SHIN DOT	
4E	◻̣̣̣̣̣̣̣̣̣̣̣̣̣̣	HEBREW POINT VARİKA	
4F		(This position shall not be used)	
50-5A		(These positions shall not be used)	
5B	]	OPENING SQUARE BRACKET	
5C		(This position shall not be used)	
5D	[	CLOSING SQUARE BRACKET	
5E-5F		(These positions shall not be used)	
60	א	HEBREW LETTER ALEF	
61	ב	HEBREW LETTER BET	
62	ג	HEBREW LETTER GIMEL	
63	ד	HEBREW LETTER DALET	
64	ה	HEBREW LETTER HE	
65	ו	HEBREW LETTER VAV	
66	ז	HEBREW LETTER ZAYIN	
67	ח	HEBREW LETTER HET	
68	ט	HEBREW LETTER TET	
69	י	HEBREW LETTER YOD	
6A	ך	HEBREW LETTER FINAL KAF	Final form
6B	כ	HEBREW LETTER KAF	Ordinary form
6C	ל	HEBREW LETTER LAMED	
6D	ם	HEBREW LETTER FINAL MEM	Final form
6E	מ	HEBREW LETTER MEM	Ordinary form
6F	ן	HEBREW LETTER FINAL NUN	Final form

Table 3 (concluded)

Code	Graphic	Name	Comments
70	נ	HEBREW LETTER NUN	Ordinary form
71	ד	HEBREW LETTER SAMEKH	
72	ע	HEBREW LETTER AYIN	Final form
73	ף	HEBREW LETTER FINAL PE	
74	פ	HEBREW LETTER PE	Ordinary form
75	ץ	HEBREW LETTER FINAL TSADI	Final form
76	צ	HEBREW LETTER TSADI	Ordinary form
77	ק	HEBREW LETTER QOF	Undifferentiated form
78	ר	HEBREW LETTER RESH	
79	ש	HEBREW LETTER SHIN	
7A	ת	HEBREW LETTER TAV	
7B	ך	HEBREW LETTER YIDDISH DOUBLE VAV	
7C	װ	HEBREW LETTER YIDDISH VAV YOD	
7D	ײ	HEBREW LETTER YIDDISH DOUBLE YOD	
7E		(This position shall not be used)	

5.2 Special vowel points, accents and marks

Table 4 gives the code, graphic and name of each character in the set of additional Hebrew script characters. This set includes many special points and accent (or cantillation) marks used in texts from several geographic areas. When a special character is applicable to a specific geographic area, the area is identified in the comments section by a single upper-case letter according to the following list:

(B) = Babylonian;

(P) = Palestinian;

(S) = Samaritan;

(T) = Tiberian.

Table 4 — Set 2: Additional Hebrew characters

Code	Graphic	Name	Comments
21	|	HEBREW PUNCTUATION PASEQ	Placed between letters; separates certain words in some old texts
22	:	HEBREW PUNCTUATION SOF PASUQ	
23-3F		(These positions shall not be used)	
40	◌̇	HEBREW ACCENT REVIA	Placed above letter: ◌̇; (B) (T)
41	◌̈	HEBREW ACCENT TSERE	
42	◌̇̇	HEBREW ACCENT ACUTE TSERE	Placed above letter: ◌̇̇; (B) (P)
43	◌̈̈	HEBREW ACCENT GRAVE TSERE	
44	◌̇̇̇	HEBREW ACCENT ZAQEF QATAN	Placed above letter: ◌̇̇̇; (B) (P) (T)
45	◌̈̈̈	HEBREW ACCENT SEGOL	
46	◌̇̇̇̇	HEBREW MARK UPPER DOT	Placed above letter: ◌̇̇̇̇; (B) (P)
47	◌̈̈̈̈	HEBREW ACCENT DOUBLE ACUTE	
48	◌̇̇̇̇̇	HEBREW ACCENT SHADDAH	Used for holam; center or left Placed above letter; used in Ladino Placed above letter; ◌̇̇̇̇̇; used in Judeo-Arabic

Table 4 (concluded)

Code	Graphic	Name	Comments
49		HEBREW ACCENT ZAQEF GADOL	Placed above letter:
4A		HEBREW ACCENT PASHTA	Placed above letter to the left:
4B		HEBREW ACCENT TEVIR	Placed below letter:
4C		HEBREW ACCENT GERESH MUQDAM	Placed above letter to the right:
4D		HEBREW ACCENT GERSHAYIN	Placed above letter:
4E		HEBREW ACCENT QARNEY PARA	Placed above letter:
4F		HEBREW ACCENT MERKHA KEFULA	Placed below letter:
50		HEBREW ACCENT QAMATS	Placed above letter: ; (P) (S)
51		HEBREW ACCENT ACUTE	Placed above letter: ; (B) (P)
52		HEBREW ACCENT GRAVE	Placed above letter: ; (B)
53		HEBREW ACCENT GERESH	Placed above letter: ; (T) (B)
54		HEBREW ACCENT QADMA	Placed above letter: ; (T)
55		HEBREW ACCENT SAMARIAN HOLAM	Placed above letter: ; (S)
56		HEBREW ACCENT SAMARIAN SEGOL	Placed above letter: ; (S)
57		HEBREW ACCENT BABYLONIAN QAMATS	Placed above letter: ; (B)
58		HEBREW ACCENT OLE	Placed above letter: ; (S) (T)
59		HEBREW ACCENT ILUY	Placed above letter: ; (T)
5A		HEBREW ACCENT PAZER	Placed above letter: ; (T)
5B		HEBREW ACCENT RAPE	Placed above letter: ; (P)
5C		HEBREW ACCENT DAGESH	Placed above letter: ; (P)
5D		HEBREW ACCENT ZARQA	Placed above letter: ; (T)
5E		HEBREW ACCENT DEHI	Placed below letter to the right:
5F		HEBREW ACCENT ZINOR	Placed above letter to the left:
60		HEBREW ACCENT BABYLONIAN PATAH	Placed above letter: ; (B)
61		HEBREW ACCENT BABYLONIAN QAMATS	Placed above letter: ; (B)
62		HEBREW ACCENT BABYLONIAN DAGESH	Placed above letter: ; (B)
63		HEBREW ACCENT SHALSHELET	Placed above letter: ; (T)
64		HEBREW ACCENT TELISHA GEDOLA	Placed above letter: ; (T)
65		HEBREW ACCENT TELISHA QETANA	Placed above letter: ; (T)
66		HEBREW ACCENT ASTERISK	Placed above letter:
67		HEBREW MARK MASORA CIRCLE	Placed above letter:
68-6F		(These positions shall not be used)	
70		HEBREW ACCENT METEG	Placed below letter: ; (T)
71		HEBREW ACCENT MERKHA	Placed below letter: ; (T)
72		HEBREW ACCENT TIPEHA	Placed below letter: ; (T)
73		HEBREW ACCENT MUNAH	Placed below letter: ; (T)
74		HEBREW ACCENT YETIV	Placed at right of letter: ; (T)
75		HEBREW ACCENT MAHAFAKH	Placed at left under letter: ; (T)
76		HEBREW ACCENT ETNAHTA	Placed below letter: ; (T)
77		HEBREW ACCENT YERAH BEN YOMO	Placed below letter: ; (T)
78		HEBREW ACCENT DAREGA	Placed below letter: ; (T)
79-7E		(These positions shall not be used)	

6 Explanatory notes

6.1 Points and accents in code tables

The characters in Set 1, column 4 (table 1), positions 40 to 4A are the most important Tiberian points. Those in Set 1, column 4 (table 1), positions 4B to 4E and Set 2 (table 2), columns 4 to 7 are less used Tiberian points and other accents. *Point* and *accent* are the generic terms used in reference to marks, signs and special characters used in addition to the basic Hebrew alphabet.

6.2 Spacing and non-spacing characters

The characters coded in Set 1, column 4 (table 1) and Set 2, columns 4 to 7 (table 2) represent combining marks which are non-spacing characters, that is, characters whose use is not followed by the forward movement of an output device. In a character string, these non-spacing characters are input before the characters they modify. Multiple combining marks associated with one letter are to be encoded in the order in which they appear, reading left to right or top to bottom. They are intended to be combined with other spacing characters in this International Standard or characters from the basic Latin set. The BACKSPACE character (hexadecimal code 08 in ISO/IEC 646) should not be used when encoding non-spacing characters.

6.3 Types of characters

Four types of characters are included in Set 1 and Set 2:

- a) **Alphabetic characters.** In Set 1, columns 6 and 7 (table 1). The forms of the alphabetic characters marked *ordinary* are not used at the end of a word, except in some Yiddish texts and in some acronyms. The form marked *final* is used at the end of a word. In display, the placement of the point depends on the shape of the alphabetic character.
- b) **Diacritic-like characters.** In Set 1, column 4 (45, 4B to 4D); in Set 2, column 4 (47 and 48). These characters are always used in conjunction with other characters and usually modify the pronunciation of consonants.
- c) **Vowels, accents and cantillation marks.** In Set 1, column 4 (40 to 4A, 4E); in Set 2, columns 4, 5, 6 and 7. The characters in Set 1 represent vowels pronounced after or before the letter on or under which they are placed. The characters in Set 2 include accents used in biblical texts and cantillation marks that indicate punctuation, tone or serve as musical notes for the chanting of text.

The vowels in Set 1, positions 40 to 44, and 46 to 4A are placed under a letter, usually in the middle (\aleph \aleph \aleph); but under dalet (Set 1, 63) and resh (Set 1, 78) they are slightly to the right (\aleph \aleph). Vowels under final kaf (Set 1, 6A) and final nun (Set 1, 6F) are placed in the middle of the letter (\aleph \aleph). The vowel holam is usually placed above and to the left of the letter: \aleph (holam + kaf); but it is sometimes placed directly above the letter: \aleph (holam + vav).

The characters in Set 2, columns 4 to 7 are placed above or below letters.

- d) **Punctuation marks, numerals and special characters.** In Set 1, columns 2, 3 and 5; in Set 2, column 2. These are all spacing characters.

6.4 Rendering of characters

The rendering of graphic characters is intended solely to identify uniquely these extended Latin script letters. The graphics used do not necessarily represent the most desirable calligraphic forms.

6.5 Names of characters

The names of characters (but not codes) have been made to correspond as much as possible to those assigned in ISO/IEC 10646-1.