

PHONOTACTIC RULES FOR THE ITHKUIL SUCCESSOR LANGUAGE, v. 0.5

In the following discussion, the term “consonant-form” refers to either a single consonant or any contiguous grouping of two to six consonants. The term “vowel-form” refers to either a single vowel, a diphthong, or a disyllabic vowel conjunct (e.g., *-eo-*). The term “liquid” refers to the consonants *-l-* and *-r-*, the term “semi-consonant” refers to *-w-* and *-y-*, the term “nasal” refers to *-m-*, *-n-*, and *-ñ-*, the term “sibilant” refers to *-s-*, *-z-*, *-š-*, *-ž-*, *-c-*, *-č-*, *-j-*, and *-ç-*. the term “affricate” or “sibilant affricate” refers to *-c-*, *-ž-*, *-č-*, and *-j-*, and the term “sibilant fricative” refers to *-s-*, *-z-*, *-š-*, *-ž-*, and *-ç-*. The term “non-back fricative” means any fricative other than *-x-* or *-h-*. The term “homologous (consonants)” means that two consonant share the same place of articulation (e.g., apico-dental, lamino-velar, etc.) A form preceded by an asterisk means the form is prohibited/unacceptable. Readers should also be aware that these rules are not the same as those of Ithkuil (some combinations are more strictly constrained while others are more permissible).

PHONEMIC INVENTORY

	LABIAL	LABIO-DENTAL	LABIO-VELAR	APICO-DENTAL	INTER-DENTAL	APICO-ALVEOLAR	ALVEOLAR RETROFLEX	ALVEOLO-PALATAL	PALATAL	VELAR	UVULAR	GLOTTAL	LATERAL
STOP	p b			t d						k g		ʔ	
FRICATIVE		f v			ʈ ɖ	s z		ʃ ʒ		x	(x)	h	l̥
AFFRICATE						c ʒ		č j	ç				
NASAL	m			n						ŋ			
LIQUID	FLAP / TRILL						r						
	NON-FLAP												l
APPROXIMANT			w						y		ř		

	FRONT		CENTRAL		BACK	
	unrounded	rounded	unrounded	rounded	unrounded	rounded
HIGH	i		ĩ	ü		u
MID	e	ö			ë	o
LOW	ä		a			

1. General phonotactic constraints

- 1.1. All syllables must contain a single vowel or a single diphthong.
- 1.2. Vowels or diphthongs are not permitted in word-initial position; all word-initial syllables must begin with a consonant. For words beginning with a glottal-stop followed by a vowel, the glottal-stop is not written, however it must still be pronounced.
- 1.3. Any word-medial or word-final syllable may begin with a consonant-form or may begin with a single vowel only if the preceding syllable ends in a single vowel (not a diphthong). Diphthongs cannot immediately follow a vowel or another diphthong. (This is different from Ithkuil 2011, where forms such as *-eai-* are permitted).
- 1.4. Disyllabic vowel conjuncts (e.g., *ae*, *eo*, *ia*, *ou*) are permitted, but tri-syllabic vowel-conjuncts or greater are not.
- 1.5. The glottal-stop occurs in word-initial position (where it is unwritten) followed by a vowel, as well as in syllable-initial position inter-vocally (i.e., preceded by and followed by a vowel). It also occurs in syllable-final position if preceded by a vowel and followed by a consonant. It cannot be immediately preceded by another consonant in the same word. The glottal stop cannot occur in word-final position except in the unusual instance of monosyllabic parsing adjuncts of the form **Vʔ* where V is a single vowel (e.g., *aʔ*, *oʔ*, *uʔ*, etc.)

- 1.6. If a word begins with **h-**, the preceding word cannot end with **-h** if it is in the same breath-group. The two words must either be separated by a pause, or a(n epenthetic) vowel must be added to the end of the first word.
- 1.7. Geminated (doubled) consonants are permissible (except for the glottal-stop, **-w-**, and **-y-**), but a contiguous string of the same consonant repeated three or more times in a row is not permitted.

2. Prohibited consonantal conjuncts

Due to difficulty/awkwardness in pronunciation, or because they are too phonetically indistinguishable from other forms, the following general restrictions on consonantal forms apply, whether within the same syllable or across adjacent syllables. (NOTE: See Section 7 below as to when prohibited consonant forms occur at the boundaries of two adjacent words.)

- 2.1. No consonant can be immediately followed by a glottal-stop in the same word.
- 2.2. The dental stops (**t**, **d**) cannot be immediately followed by any sibilant (**s**, **z**, **š**, **ž**, **c**, **č**, **j**), as these would be homophonic with the various sibilant affricates (**c**, **č**, **j**) or their geminated forms (**cc**, **žž**, **čč**, **jj**). Neither can the dental stops be followed by their fricative counterparts, as the stop portion of such a conjunct is too audibly indiscernible; thus, the following conjuncts are not permitted: ***-tʃ-**, ***-dʃ-**, ***-tʃ-**, ***-dʃ-**.
- 2.3. The velar stops **-k-** and **-g-** cannot be followed by the velar/uvular fricative **-x-** nor by the velar nasal **-ŋ-**.
- 2.4. Although some natural languages such as English allow voiceless-voiced pairings of homologous stops such as /kɡ/ in *backgammon*, /td/ as in *letdown*, or /pb/ as in *clipboard*, such combinations are not permitted in this language. The reversed pattern of voiced-voiceless pairings (e.g., /gk/, /dt/, /bp/) is likewise prohibited. Non-homologous pairings are permitted, e.g., **kd**, **pd**, **gp**, **tg**, **pg**, **dk**.
- 2.5. The same restriction on homologous voiced-voiceless (and voiceless-voiced) pairings applies to fricatives and to affricates. Thus conjunctions such as the following are prohibited: ***fv**, ***vf**, ***tʃd**, ***dʃt**, ***cz**, ***zc**, ***čj**, ***jč**. Note that pairings of non-homologous sibilant affricates are permitted if the first is alveolar and the second alveolo-palatal, e.g., **cč**, **cj**, **žč**, **žj**, but not the reverse, e.g., ***čc**, ***jc**, ***čž**, ***jž**.
- 2.6. An alveolo-palatal sibilant fricative followed by an apico-alveolar affricate is not permitted, i.e., ***šc**, ***šž**, ***žc**, ***žž**.
- 2.7. The sibilant fricative **-s-** cannot be followed by voiced affricate **-ž-**.
- 2.8. Other than geminates, any conjunction of sibilant fricatives (**s**, **z**, **š**, **ž**) is prohibited, e.g., ***sz**, ***žs**, ***šs**, etc.
- 2.9. Conjunction of a sibilant affricate followed by a sibilant fricative is prohibited, e.g., ***čs**, ***cz**, ***žz**, ***čž**, ***žs**, **js**, **jz**, **jš**, etc.
- 2.10. The voiceless palatal fricative **-ç-** cannot be preceded or followed by a sibilant fricative (**s**, **z**, **š**, **ž**), nor preceded by a sibilant affricate (**c**, **č**, **j**), nor followed by a voiced sibilant affricate (**č**, **j**). Additionally, **-ç-** cannot be preceded or followed by **-l-** or **-h-**, and cannot be preceded by **-x-**.
- 2.11. Conjunction of a nasal with an affricate of the same or similar place of articulation is prohibited, as these are too phonetically indistinguishable from nasals followed by the corresponding sibilant fricative. Thus, the following conjuncts are prohibited: ***nc**, ***nč**, ***nz**, ***nj** in that they are too phonetically similar to **ns**, **nš**, **nz**, **nž**.
- 2.12. Similarly to the above, conjuncts of **-m-** followed by a bilabial stop plus a bilabial or interdental fricative or dental stop are prohibited, as they are too phonetically indistinguishable from the same conjunct without the medial stop, e.g., ***mpf**, ***mbv**, ***mpt**, ***mbd**, ***mpt**, ***mbd** (vs. **mf**, **mv**, **mʃ**, **mɸ**, **mt**, **md**). The combination ***ngd** is likewise prohibited (but not **nkt**).
- 2.13. Again, similarly to the above, conjuncts of a nasal followed by a homologous stop plus sibilant are prohibited, as they are too phonetically indistinguishable from the same conjunct without the medial stop, e.g., ***mps**, ***mbz**, ***nks** [vs. **nš**], ***ngz** [vs. **nž**], ***mpš**, ***mbž**, ***nkš** [vs. **nš**], ***ngž** [vs. **nž**], etc.
- 2.14. The nasal **n-** cannot be followed by the labial stops **-p** and **-b**, as they are too likely to assimilate to **-mp-** and **-mb-**.
- 2.15. The combinations **nf**, and **nv** cannot be followed by a consonant; they must be followed by a vowel.
- 2.16. The velar nasal **-ŋ-** cannot occur before velar **-k-**, **-g-**, or uvular **-x-**, since the dental nasal **-n-** already assimilates to velar [ŋ] before these three consonants. (Note that the combination **nř** is permitted, since **-n-** does not assimilate to velar [ŋ] before **-ř-**.) Additionally, the velar nasal **n-** cannot be followed by **-y** (as the resulting combination ***ny** is phonetically too indistinguishable from **ny**).
- 2.17. The velar/uvular fricative **-x-** cannot be followed by any sibilant fricative (**s**, **z**, **š**, **ž**), **-ç-**, **-g-**, **-l-**, **-ň-**, **-y-**, **-h-** or **-ř-**.
- 2.18. The lateral fricative **-l-** cannot be preceded by a voiced stop nor by **-h-** or **-ç-**. It cannot be followed by any sibilant fricative nor by **-h-** or **-ç-**.

- 2.19. As the final member of a consonant conjunct, **-h-** cannot be preceded by the lateral fricative **-l-** nor the velar/uvular fricative **-x-**, nor the palatal fricative **-ç-**.
- 2.20. Neither **-r-** nor the fricative **-h-** can be followed by uvular approximant **-ř-**.
- 2.21. The uvular approximant **-ř-** cannot be followed by **-r-**.
- 2.22. In consonant conjuncts, the semiconsonants **-w-** and **-y-** can only appear as the last member of the conjunct and must be followed by a vowel-form.

3. Permissible Word-Initial Consonant Forms

A word-initial consonant-form contains from one to four consonants, **#C(C)(C)(C)-**, and has the following structural rules (not including rules for geminated forms—see Sec. 6):

- 3.1. **Monoconsonantal Form #C-**: Any single consonant, including the glottal-stop, is permissible in word-initial position except for **l-** (as it is phonetically indistinguishable from the allophonic pronunciation of word-initial **hl-**).
- 3.2. **Biconsonantal Form #CC-**: Any stop other than the glottal stop (i.e., **p, b, t, d, k, g**) may be followed by any liquid or approximant (i.e., **r, l, ř, w, y**). The stops **p, b, k**, and **g** may be followed by a sibilant fricative of the same voicing (e.g., **ps, gz, kš, bž**, etc. but not ***pz, *gs, *kž, bš**, etc.). Stops may be followed by any non-sibilant fricative of the same voicing and a different place of articulation, e.g., **pç, pf, bv, pʃ, bɸ, pl, px, tç, ph, tf, dv, tx, tʃ, th, kç, kf, gv, kʃ, gɸ, kh**; exceptions to this rule are ***kl** (which is phonetically too indistinguishable in normal speech from **tl**), as well as any form which would violate the rules in Sec. 2 above. In word-initial position, bilabial and dental stops cannot be followed by a nasal, e.g., ***pm, *bn, *pñ, *tn, *dm, *tñ**, however velar stops may be followed by **-m** or **-n**, e.g., **km, gn**, etc. Additional rules for word-initial bi-consonantal conjuncts are as follows:
- 3.2.1. A word-initial sibilant fricative (**s, z, š, ž**) may be followed by any other consonant of the same voicing, except another sibilant fricative, **-l-** or **-h-**. Additionally, a sibilant fricative, whether voiced or voiceless, may be followed by any nasal, any liquid, any approximant, or **-v**.
- 3.2.2. A word-initial sibilant affricate (**c, ž, č, j**) may be followed by any liquid, any nasal, **-w-**, or any stop consonant of the same voicing. It can also be followed by any non-sibilant fricative of the same voicing other than **-l-**, and may also be followed by **-v** regardless of voicing. It cannot be followed by a sibilant fricative (**s, z, š, ž**) or another affricate or **-y**.
- 3.2.3. Word-initial **x-** may be followed by **-p, -t, -c, -č, -m, -n, -l, -r, -w**.
- 3.2.4. Word-initial **ç-** may be followed by **-p, -t, -c, -č, -k, -m, -n, -ñ-, -l, -r, -ř-, -w**.
- 3.2.5. Word-initial fricatives **f, v, ʃ, and ɸ** may be followed by any liquid, approximant, or nasal. They may also be followed by any stop consonant or affricate of the same voicing.
- 3.2.6. While **-l-** is not permitted as a single word-initial consonant, it is permissible as the initial member of a word-initial consonant conjunct. As such, it can only be followed by a voiceless stop, a voiceless affricate, a nasal, or **-w** or **-y**.
- 3.2.7. Word-initial **h-** can be followed by liquids **-l** or **-r**, the nasals **-m** or **-n**, or by **-w**.
- 3.2.8. Word-initial nasals **m-** and **n-** may be followed by a liquid (**l, r**) or an approximant (**w, y, ř**). The same rules apply to the velar nasal **ñ-** except that it cannot be followed by **-y-** or **-ř-**.
- 3.2.9. Word-initial liquids **l-** and **r-** may be followed by the semiconsonants **-w** or **-y**.
- 3.3. **Triconsonantal Form #CCC-**: In word-initial tri-consonantal conjuncts, a word-initial stop (other than **t** or **d**) may be followed by a sibilant fricative (**s, z, š, ž**) of the same voicing. The third consonant of such a conjunct may then be any consonant that can follow a sibilant fricative in a bi-consonantal conjunct per the rules above. Word-initial stops (including **t** or **d**) may also be followed by non-sibilant fricatives of the same voicing (excluding **-x**), in which case the third consonant of the conjunct is limited to whichever approximant(s) (**-w** or **-y**) is permitted to follow that fricative in a bi-consonantal conjunct per the rules above. Additional rules for word-initial tri-consonantal conjuncts are as follows:
- 3.3.1. Word-initial stops followed by **-l** or **-r-** may be followed by **-w** or **-y**.
- 3.3.2. Word-initial voiceless stops followed by **-ç** may be followed by **-m** or **-n** or **-ñ**.
- 3.3.3. Bi-consonantal conjuncts beginning with **p-** or **k-** followed by **-f** or **-ʃ** may take a following **-y** or **-w**. The forms **pʃ-**, and **tʃ-** may be followed by **-w** or **-y**.
- 3.3.4. Word-initial sibilant fricatives (**s, z, š, ž, ç**) may be followed by any stop consonant of the same voicing, in which case the third consonant of the conjunct is limited to an approximant or a liquid. Word-initial sibilant fricatives may also be

followed by any nasal, in which case the third consonant must be whichever semi-consonant(s) (-w or -y) is/are permitted to follow that nasal in a bi-consonantal conjunct per the rules above.

- 3.3.5. Word-initial triconsonantal conjuncts beginning with **h-** are limited to **hlw**, **hrw**, **hmw**, **hnw**, **hmy**, **hny**, and the following forms containing geminates: **hll**, **hrr**, **hmm**, **hnn**.
- 3.3.6. Word-initial sibilant affricates (**c**, **ž**, **č**, **j**) followed by a stop consonant of the same voicing may take a following liquid or approximant to form a tri-consonantal conjunct. If the affricate is followed by a nasal, that nasal may be followed by whichever approximant(s) (-w or -y) is permitted to follow that nasal in a bi-consonantal conjunct per the rules above.
- 3.3.7. The word-initial consonant conjuncts **fl-** and **ɸl-** may take a following -w or -y to form **flw-**, **ɸlw-**, **fly-** and **ɸly-**. Other tri-consonantal conjuncts with initial fricative followed by a liquid consonant must be intervocalic.
- 3.3.8. Word-initial **-xp** and **-xt** may be followed by **-l**, **-r**, **-w** or **-y**. Word-initial **-xm**, and **-xn** may be followed by **-w** or **-y**; word-initial **xc** and **xč** may be followed by **-w**.
- 3.3.9. [For tri-consonantal conjuncts containing geminates, see Sec. 6 below.]

3.4. **Tetraconsonantal Form #CCCC-**: Word-initial tetra-consonantal conjuncts are limited to the following:

- 3.4.1. Word-initial tri-consonantal conjuncts which end in a stop consonant may take a following liquid or approximant to form the fourth consonant, e.g., **pskw-**, **gzdr-**, **kšpl-**, **bždy-**, **pstř-**, etc.
- 3.4.2. Word-initial tri-consonantal conjuncts consisting of a sibilant + stop + l may take a following -y, e.g., **skly-**, **zgly-**.
- 3.4.3. [For tetra-consonantal conjuncts containing geminates, see Sec. 6 below.]

4. Permissible Word-Final Consonant Forms

Word-final consonant forms may be from one to four consonants in length and are structured per the following rules (not including rules for geminated forms—see Sec. 6):

- 4.1. **-C**: A single word-final consonant following a vowel-form may be any single consonant except **-w** or **-y**. The glottal-stop can only appear word-finally in the narrow instance of monosyllabic parsing adjuncts of the form 'V' (e.g., **a'**, **o'**, etc.). (Note: As for words ending in **-h**, see paragraph 1.6.)
- 4.2. **-CC**: Word-final bi-consonantal conjuncts are subject to the following structural rules:
 - 4.2.1. A stop consonant may be followed by any fricative of the same voicing, as long as the rules on prohibited conjuncts from Sec. 2 are not violated, and with regard for the special rule on final **-h** in paragraph 1.6. A stop consonant cannot be followed by any affricate, nasal, liquid, or approximant in word-final position.
 - 4.2.2. A labial or velar stop consonant may be followed by a dental stop of the same voicing, e.g., **-kt**, **-pt**, **-bd**, **-gd**.
 - 4.2.3. A sibilant fricative may be followed by any stop of the same voicing. A sibilant fricative cannot be followed by any other fricative, affricate, nasal, liquid, or approximant in word-final position.
 - 4.2.4. A sibilant affricate may be followed by a dental or velar stop of the same voicing. A sibilant affricate cannot be followed by any other consonant in word-final position.
 - 4.2.5. The fricatives **f** and **v** may be followed by a dental or velar stop of the same voicing, or by a sibilant fricative of the same voicing. They cannot be followed by any other consonant in word-final position.
 - 4.2.6. The fricatives **ɸ**, and **ɸ** may be followed by a dental or velar stop of the same voicing. They cannot be followed by any other consonant in word-final position.
 - 4.2.7. The fricatives **ɸ** and **x** may be followed by any voiceless stop. They cannot be followed by any other consonant in word-final position.
 - 4.2.8. The nasals **m** and **n** may be followed by any stop or fricative as long as the rules on prohibited conjuncts from Sec. 2 above are not violated and with regard for the rule in paragraph 1.6. They cannot be followed by any other consonant in word-final position.
 - 4.2.9. The nasal **ň** may be followed by any dental stop or any fricative except **x** or **ɸ**. It cannot be followed by any other consonant in word-final position.
 - 4.2.10. The liquid **-r-** may be followed by any consonant except the three not allowed in word-final position (**'**, **w**, **y**). If followed by **h**, see the rule in paragraph 1.6.

4.2.11. The liquid **-l-** may be followed by any consonant except **ʔ**, **w**, **y**, **r** or **ň**. If followed by **h**, see the rule in paragraph 1.6.

4.2.12. Any geminated consonant may appear in word-final position except for a geminated stop.

4.3. **-CCC#**: The following tri-consonantal combinations are allowed in word-final position:

Initial Consonant	2nd Cons.	3rd Consonant
r ř l	p	t k f ʧ x s š h ʣ
m ň	p	h ʣ
s š ʣ	p	f ʧ s š ʣ
l r ř	t	k f x h ʣ
n	t	k f x h
m ň s š ʣ	t	h ʣ
l r ř	k	t f ʧ s š h ʣ
n f ʧ ʣ	k	h ʣ
m	k	f ʧ h ʣ
s š ʣ	k	f ʧ s š h ʣ
r ř	b	d g v ɖ z ž
l	b	v ɖ z ž
r ř	d	b g v
r ř	g	b d v ɖ z ž
l	g	v ɖ z ž
l r ř m ň	f	t k f s š
p t k	f	k f
f	f	t k s š
p k r l ř m n ň	ʧ	t k ʧ
ʧ	ʧ	t k
r l ř	x	t x
p t f s š n m	x	x
x	x	t
p t r ř m n ň	ʣ	t k ʣ
ʣ ʣ	ʣ	t k
r l ř m n ň p k f	s	p t k f ʧ x s
ʧ	s	p t k s
s	s	p t k f ʧ x
r l ř m n ň p k f	š	p t k f ʧ x š
ʧ	š	p t k š
š	š	p t k f ʧ x
r ř l	v	v z ž
b g m ň	v	v
v	v	z ž
b g r ř l n m ň	ɖ	ɖ
r ř l n m ň	z	b d g z

b g v	z	z
z	z	b d g
r ř l n m ň	ž	b d g ž
b g v	ž	ž
ž	ž	b d g
r ř l	c	t k c h
r ř l	č	t k č h
r ř l	ž	d g ž
r ř l	j	d g j
r l ř	m	p t k b d f t x s š v d z ž m l ç
m	m	p t k b d f t x s š v d z ž l ç
r ř	n	t k d g f t x s š v d z ž n l ç
l	n	t k d g t s š z ž l ç
n	n	t k d g f t x s š v d z ž l ç
r ř	ň	t d f t s š v d z ž ň ç
l	ň	ň
ň	ň	t d f t s š v d z ž ç
l	l	p t k b d g f t x s š v d z ž c č z j m n ň l ç
r	r	p t k b d g f t x s š v d z ž c č z j m n ň l ç
ř	ř	p t k b d g f t x s š v d z ž c č z j m n ň l ç
p t k m n ň r l ř	ç	t k ç
ç	ç	t k

4.4. -CCCC#: Based on the grammar of the language, the only tetra-consonantal conjuncts which can occur in word-final position are those generated by the Slot VI C_A complex. Those that are phonotactically permissible are as follows:

$$\begin{array}{lll}
 [l/r/\text{ř}] + [k/p] + [s/\text{š}/\text{t}/\text{ç}] + [t/k] & [l/r/\text{ř}] + [t] + [\text{ç}] + [t/k] & [l/r/\text{ř}] + [p] + [f] + [t/k] \\
 [l/r/\text{ř}] + [fs/\text{fš}] + [t/k] & [r] + [n/\text{ň}/m] + [s/\text{š}/\text{t}/\text{ç}] + [t/k] & [r] + [\text{ň}/m] + [f] + [t/k]
 \end{array}$$

All other C_A forms consisting of a tetra-consonantal conjunct cannot be word-final and must be disyllabic and followed by a vowel.

4.5. Penta-consonantal conjuncts in word-final position: Conjuncts comprising five contiguous consonants are not allowed in word-final position except for those penta-consonantal C_A forms that result from gemination of one of the tetra-consonantal C_A consonant conjuncts shown immediately above in Sec. 4.4.

5. Permissible Intervocalic Consonant Conjuncts

Intervocalic consonant forms (i.e., immediately preceded and followed by a vowel-form in the same word) may be from one to six consonants in length and are structured per the following rules (not including rules for geminated forms—see Sec. 6):

- 5.1. **-C-**: The single voiceless lateral fricative **-ɬ-** is not permitted in intervocalic position (to avoid confusion with the allophonically identical **-hl-**). by All other single consonants are permitted inter-vocalically, including the glottal-stop and **-h-**.
- 5.2. **-CC-**: Any combination of two consonants that is not prohibited by the rules in Section 2 is permitted inter-vocalically. Additionally, any consonant can occur in inter-vocalic position as a geminate, except for the three consonants that do not geminate (**ʔ, w, y**).
- 5.3. **-CCC-**: (See the table in Sec. 9 below.)
- 5.4. **-CCCC-**: (See the table in Sec. 10 below.)
- 5.5. **-CCCCC-**: (See the table in Sec. 11 below.)

6. Consonant Conjuncts Containing Geminates

- 6.1. Any single consonant except the glottal stop, **-w-**, and **-y-**, may be geminated in intervocalic position.
- 6.2. Any single consonant that may be geminated intervocalically may also be geminated in either word-initial or word-final position except for stops.
- 6.3. Tri-consonantal conjuncts containing a geminated consonant as the first two consonants of the conjunct:
 - 6.3.1. In word-initial position, **#C₁C₁C₂-**: Any permissible word-initial geminate may be followed by any single consonant as long as the non-geminate form of the first consonant plus the third consonant constitute a permissible word-initial bi-consonantal conjunct.
 - 6.3.2. In intervocalic position, **-VC₁C₁C₂V-**: A geminated consonant may be followed by any single consonant as long as the non-geminate form of the first consonant plus the third consonant constitute a permissible intervocalic bi-consonantal conjunct.
 - 6.3.3. In word-final position, **-C₁C₁C₂#**: A geminated consonant may be followed by any word-final single consonant as long as the non-geminate form of the first consonant plus the third consonant constitute a permissible word-final biconsonantal conjunct and the tri-consonantal conjunct as a whole is listed in the table in Section 4.3.
- 6.4. Tri-consonantal conjuncts containing a geminated consonant as the last two consonants of the conjunct:
 - 6.4.1. In word-initial position, **#C₁C₂C₂-**: A word-initial single consonant may be followed by any geminate as long as the first consonant plus the non-geminate form of the second consonant constitute a permissible word-initial bi-consonantal conjunct and the tri-consonantal conjunct as a whole is listed in the table in Section 9 below.
 - 6.4.2. In intervocalic position, **-VC₁C₂C₂V-**: a geminated consonant may be preceded by any single consonant as long as the first consonant plus the non-geminate form of the second consonant constitute a permissible intervocalic bi-consonantal conjunct and the tri-consonantal conjunct as a whole is listed in the table in Section 9 below.
 - 6.4.3. In word-final position, **-C₁C₂C₂#**: A word-final geminated consonant may be preceded by any single consonant as long as the first consonant plus the non-geminate form of the second consonant constitute a permissible word-final bi-consonantal conjunct and the tri-consonantal conjunct as a whole is listed in the table in Section 4.3.
- 6.5. Tetra-consonantal or penta-consonantal conjuncts containing a geminated consonant:

Only one geminated consonant pair can occur within a single consonant conjunct. Forms containing two geminated pairs such as ***nnss** or ***rrkll** are impermissible.

 - 6.5.1. Tetra-consonantal conjuncts containing a geminated consonant as the first two consonants of the conjunct:
 - 6.5.1.1. In word-initial position, **#C₁C₁C₂C₃-**: A word-initial geminate may be followed by two additional consonants as long as the non-geminate form of the first consonant plus the second and third consonants together constitute a permissible word-initial tri-consonantal conjunct as per Sec. 3.3 above.
 - 6.5.1.2. In intervocalic position, **-VC₁C₁C₂C₃V-**: a geminated consonant may be followed by two additional consonants as long as the non-geminate form of the first consonant plus the second and third consonants constitute a permissible intervocalic tri-consonantal conjunct as listed in the table in Sec. 9 below.
 - 6.5.1.3. In word-final position, **-C₁C₁C₂C₃#**: See Sec. 6.5.4 below.
 - 6.5.2. Tetra-consonantal conjuncts containing a geminated consonant as the second and third consonants of the conjunct:
 - 6.5.2.1. In word-initial position, **#C₁C₂C₂C₃-**: A word-initial single consonant may be followed by any geminate plus a different consonant in fourth position as long as the following two conditions are met: (1) the non-geminated tri-consonantal form of the conjunct is a permissible word-initial tri-consonantal conjunct per the rules in Sec. 3.3,

and (2) the tetra-consonantal conjunct as a whole is listed as a permissible tetra-consonantal conjunct in the table in Sec. 10 below (e.g., the forms **krrw-** or **flly-** would not be permitted).

6.5.2.2. In intervocalic position, $-VC_1C_2C_2C_3V-$: a geminated consonant may be preceded by any single consonant and followed by another single consonant as long as the tetra-consonantal conjunct as a whole is listed as a permissible tetra-consonantal conjunct in the table in Sec. 10 below (e.g., the forms **-krrw-** or **-flly-** would not be permitted)

6.5.2.3. In word-final position, $-C_1C_2C_2C_3\#$: See Sec. 6.5.4 below.

6.5.3. Tetra-consonantal conjuncts containing a geminated consonant as the third and fourth consonants of the conjunct:

6.5.3.1. In word-initial position, $\#C_1C_2C_3C_3-$: A word-initial single consonant followed by a different consonant may in turn be followed by any geminate as long as the following two conditions are met: (1) the non-geminated tri-consonantal form of the conjunct is a permissible word-initial tri-consonantal conjunct per the rules Sec. 3.3., and (2) the tetra-consonantal conjunct as a whole is listed as a permissible tetra-consonantal conjunct in the table in Sec. 10 below (e.g., the forms **ksff-** or **strr-** would not be permitted).

6.5.3.2. In intervocalic position, $-VC_1C_2C_3C_3V-$: A single consonant followed by a different consonant may in turn be followed by any geminate as long as the tetra-consonantal conjunct as a whole is listed as a permissible tetra-consonantal conjunct in the table in Sec. 10 below (e.g., the forms **-ksff-** or **-strr-** would not be permitted).

6.5.3.3. In word-final position, $-C_1C_2C_3C_3\#$: See Sec. 6.5.4 below.

6.5.4. Word-final tetra-consonantal conjuncts containing a geminated consonant:

The only tetra-consonantal conjuncts in word-final position that can contain a geminate consonant are those Slot VI tri-consonantal C_A forms that have had one of their consonants geminated per the rules in Sec. 3.6.1 of the Design Document. In turn, the tri-consonantal form of the same C_A conjunct (i.e., without the geminate consonant) must be permissible as a word-final conjunct per the table in Sec. 4.3 above.

6.5.5. Penta-consonantal conjuncts containing a geminated consonant:

Any penta-consonantal conjunct must be permissible per the table in Sec. 11. Furthermore, a penta-consonantal conjunct can only occur in intervocalic position, it cannot occur in word-initial or word-final position (i.e., it must be preceded and followed by a vowel-form).

7. Juncture rules between adjacent words

- 7.1. If any of the prohibited consonant forms described in Section 2 occurs across two adjacent words (i.e., the word-final consonant(s) of one word being juxtaposed to the word-initial consonant(s) of a second word, then the words must be separated either by a pause in speech, by inserting a(n) epenthetic vowel at the end of the first word, or modifying the structure of the second word (e.g., by reformatting the Slot structure of a Simple Formative to utilize the Complex Formative structure).
- 7.2. If a word begins or ends with a geminated consonant, the immediately adjacent word cannot end/begin with the same consonant; the triple string of the same consonant must be broken up either by a pause in speech between the two words, by inserting a(n) epenthetic vowel at the end of the first word, or by modifying the structure of the second word (e.g., by reformatting the Slot structure of a Simple Formative to utilize the Complex Formative structure).

8. Permissible Bi-Consonantal Conjuncts Which Can Be Roots or Affixes

Below is a chart showing the 25 permissible mono-consonantal C_R roots and the 679 permissible bi-consonantal conjuncts which can be roots. Following that chart is a list of permissible tri-consonantal intervocalic conjuncts which can be roots along with phonotactic rules for these tri-consonantal conjuncts. Finally, there is a listing of the permissible tetra-consonantal intervocalic conjuncts which can be roots in the language.

Permissible and Impermissible Bi-Consonantal Conjuncts That Can Also Be C_R Roots and C_S Affixes

(Blue squares are impermissible forms)

Initial Cons. ↓	2nd Consonant																														Totals	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
	p	t	k	b	d	g	f	ɬ	ç	x	v	ɖ	ɟ	s	š	z	ž	c	č	ž	j	l	r	ř	m	n	ň	w	y	h		
1	p																														29	
2	t																														19	
3	k																															27
4	b																															28
5	d																															18
6	g																															26
7	f																															29
8	ɬ																															29
9	ç																															23
10	x																															19
11	v																															29
12	ɖ																															25
13	ɟ																															24
14	s																															25
15	š																															24
16	z																															26
17	ž																															24
18	c																															23
19	č																															21
20	ž																															23
21	j																															21
22	l																															30
23	r																															29
24	ř																															29
25	m																															30
26	n																															23
27	ň																															26
																																679

Twenty-five of the 27 initial consonants shown in the first column of the above table can be a C_R root or C_S affix by themselves; note that Nos. 9 and 13, -ç- and -ɟ- by themselves cannot be C_R roots or C_S affixes but can combine with other consonants to form C_R roots and C_S affixes.

Also: No C_R root or C_S affix can begin with h-, w-, or y-; no C_R root or C_S affix can contain a glottal stop.

NOTE: In addition to the values in the above table, the following seven forms are permissible as mono-consonantal or bi-consonantal intervocalic forms in the language, but cannot be a C_R root form or a C_S affix form: -h-, -hl-, -hr-, -hm-, -hn-, -hw-, -hy-.

9. Permissible Tri-Consonantal Conjuncts Which Can Be Roots or Affixes

(The table is arranged by permitted 2nd/medial consonants; geminates are treated as simply two adjacent consonants)

Initial Consonant	2nd Cons.	3rd Consonant	totals
r ř	p	ptkdgfɬxsšvdzžcčžjmlrwyhɟřç	54
l	p	ptkdgfɬxsšɖcčžjmlrwyhɟřç	25
m	p	dgmnlrwyhɟřç	12
ň	p	ɬlrwyhɟřç	9
s š ç	p	fɬsšlrwyhɟřç	36

pktečgdžjzž	p	lrwyh řč	88
fvxtđ	p	lrwyh řč	40
l	p	lrwyh řč	8
lrř	t	ptkbgfxvmlrwyh řč	54
n	t	pkbgfvmnlrwyh ř	15
ň sšç	t	fvmnlrwyh řč	48
m	t	fvlrwyh řč	10
pktečgbžjzž	t	lrwyh řč	88
fvxt	t	lrwyh řč	32
l	t	lrwyh řč	8
lrř	k	ptk bdf t s s v d z z c c z j m n l r w y h ř ç	78
n	k	pt bdf t v d z z c c z j m n l r w y h ř ç	23
mfvtđ	k	f t v l r w y h ř ç	50
ptbdsšçcčžjzž	k	f t s s v m n l r w y h ř ç	182
k l	k	lrwyhřç	14
r ř	b	t k b d g f t s s v d z z c c z j n l r w y h ř	48
l	b	v d z z n l r w y ř	10
m ñ s š z ž k t e č g d ž j f v x t đ ç	b	v l r w y ř	120
l	b	lrwyř	5
b	b	v d l r w y ř	7
r ř	d	p k b d g f v m n l r w y h ř	30
l	d	v m n l r w y ř	8
n	d	v m l r w y ř	7
m ñ	d	v l r w y ř	12
s š f v x t c c z j d ç	d	v l r w y ř	60
z ž	d	v l r w y ř	12
l	d	lrwyř	5
pkbg	d	lrwyř	20
d	d	v l r w y ř	6
r ř	g	p t b d g f t s s v d z z c c z j m n l r w y ř	48
l	g	v d m n z z l r w y ř	11
n p t b d f v t c c z j d	g	l r w y ř	65
m	g	v d z z l r w y ř	9
g	g	v d l r w y ř	7
s š z ž ç	g	v d l r w y ř	35
l	g	l r w y ř	5
lrř	f	ptk b d g f t x s s d z z c c z j m n ñ l r w y h ř ç	87
m ñ	f	ptk b d g f c c m n ñ l r w y h ř	38
ptk	f	ptk b d g f m n ñ l r w y ř	45
s š z ž x t b d g c c z j ç	f	f m n ñ l r w y ř	126
f	f	ptk b d g t x s s d z z c c z j m n ñ l r w y h ř ç	28
l	f	f l r w y ř	6
rlř	ř	p t k b d g f t x s s v c c z j m n ñ l r w y h ř	75
n ñ	ř	p t k b d g f t x v c c m n ñ l r w y h ř	42
m	ř	t k d g f t x v c c m n ñ l r w y h ř	19
s š z ž ç	ř	r w	10
x b g	ř	l r w y ř	15
ř	ř	p t k b d g f x s s v c c z j m n ñ l r w y h ř	24

pk	ř	ptkbdgfřxvnmñlrwyř	36
l	ř	řlrwyř	6
rlř	x	ptbdfřxvđcčžjmlrw	54
nm	x	ptkbdxvmlrw	24
ptbdcčzjfvřđsšzž	x	xlrmnw	96
l	x	xw	2
x	x	ptbdfřvđcčžjmlrw	17
rř	l	ptkbdgfřxlvđcčžjmnñrwř	44
ll	l	ptkbdgfřxvđcčžjmnñrwř	42
mñ	l	ptkbdgflvmlñrwř	48
pt	l	ptkbdgflvmlñrwř	32
cčzjsšzžřřvd	l	l	12
rlřmnñpkf	s	ptkbdgfřxsvđcčjmnñlrwyhř	216
bgv	s	ptkřřxscčmnñlrwyř	51
ř	s	ptkbdgřsvmlñlrwyhř	18
s	s	ptkbdgfřxvđcčjmnñlrwyhř	24
rlřmnñpkf	š	ptkbdgfřxšvđčjmnñlrwyhř	207
bgv	š	ptkřřxščwyhř	39
ř	š	ptkbdgřřvmlñlrwyhř	18
š	š	ptkbdgfřxvđčjmnñlrwyhř	23
rř	v	ptkbdgřřxšvđzžcčžjmnñlrwyhřřč	58
l	v	bdgvđzžžjmnñlrwyřč	18
mñ	v	vlrwyř	12
ptkdsšzžžjč	v	vlrwyř	66
bg	v	bdgvmlrwyrř	22
v	v	ptkbdgřřxšđzžcčžjmnñlrwyhřřč	28
l	v	wy	2
rř	ř	ptkbdgfřxvđcčžjmnñlrwyhřř	24
l	ř	bdgřmnrwyř	10
nmñ	ř	ptkbdgfřxvđmnñlrwyř	54
pk	ř	řrwyř	10
bg	ř	ptkbdgřmnlrwyř	28
zž	ř	řrwyř	10
ř	ř	ptkbdgfřxvcčžjmnñlrwyhřř	23
l	ř	wy	2
rřlnmñ	z	ptkbdgfřřxhvđzžjmnñlrwyř	138
bgv	z	ptkbdgvđzžjmnñlrwyhř	60
z	z	ptkbdgfřxvđcčžjmnñlrwyhřř	25
rřlnmñ	ž	ptkbdgfřřxhvđžjmnñlrwyř	132
bgv	ž	ptkbdgvđžjmnñlrwyhř	57
ž	ž	ptkbdgfřřxvđčjmnñlrwyhřř	23
rřl	c	ptkbdgfřřxvđcčjmnñlrwyhřř	72
c	c	ptkbdgfřřxvđčjmnñlrwyhřř	223
s	c	wyh	3
rřl	č	ptkbdgfřřxvđčmnñlrwyhřř	66

s p k r ř l m n ň	s š	p	fʃsšlrwy řhç	216
f ʃ	s š	p	fʃsšlrwy řhç	48
m	zžfxʃ	p	fʃllrwy řhç	55
n	ktzžxʃ	p	fʃllrwy řhç	66
ň	tzžfʃ	p	fʃllrwy řhç	55
r ř	fvxʃd	p	lrwy řhç	80
l	fxʃ	p	lrwy řhç	24
t m n r ř	l	p	lrwyřhç	35
z b g v	z	p	flrwy řhç	36
ž b g v	ž	p	flrwy řhç	36
p k	fʃ	p	lrwy řhç	32
r	r	p	fʃsšlrwy hç	11
ř	ř	p	fʃsšlwy řhç	11
l	l	p	fʃsšlrwy řhç	12
m	m	p	ʃsšlrwy řhç	11
ň	ň	p	fʃsšlrwy řhç	12
r ř	n	t	pkbgfvmlrwyh řç	32
r ř	ň	t	fvmlrwy řhç	24
r ř l	m	t	fvlrwy řhç	30
p t k r ř l ç m n ň	ç	t	fvmlrwy řhç	120
f	ç	t	lrwy řhç	8
f ʃ s p k r ř l m n ň	s	t	fvmlrwy řhç	132
f ʃ š p k r ř l m n ň	š	t	fvmlrwy řhç	132
r ř	pktcčgbžjzžfvxʃ	t	lrwy řhç	240
l	pktcčzž	t	lrwy řhç	56
m	zžpfxʃm	t	lrwy řhç	56
n	zžkxʃn	t	lrwy řhç	48
ň	zžfʃň	t	lrwy řhç	40
l	fxʃ	t	lrwy řhç	24
p m n r ř l	l	t	lrwyřhç	42
t	l	t	rwyřhç	6
z b g v	z	t	flrwy řhç	36
ž b g v	ž	t	flrwy řhç	36
p k	fʃ	t	lrwy řhç	32
r	r	t	pkbgfvlrwy hç	13
ř	ř	t	pkbgfvlwy řhç	13
l	l	t	kgfvlrwy řhç	12
m	m	t	kgfvmlrwyh řç	14
n	n	t	kgfvmlrwyh řç	14
ň	ň	t	kgfvmlrwyh řç	14
r ř	n	k	ptbdfʃvdččžjmlrwyhřç	42
r ř l	pmfvʃ	k	fʃsšlrwyřhç	165
nr ř l	t	k	fʃvlrwyřhç	40
m	fʃm	k	fʃvsšmlrwyřhç	42
n	ʃn	k	fʃvsšmlrwyřhç	28
p t k r ř l ç m n ň	ç	k	fʃvmlrwyřhç	120
f	ç	k	vlrwyřhç	8

pkfřmnrřl	sš	k	fřvmnlrwyřhč	240
rřl	kbdđcčžjzž	k	fřvlrwyřhč	300
s	s	k	fřvmnlrwyřhč	12
š	š	k	fřvmnlrwyřhč	12
zbgmnřv	z	k	fřvmnlrwyřhč	84
žbgmnřv	ž	k	fřvmnlrwyřhč	84
t m n r ř	l	k	fřvmnlrwyřhč	60
pk	fř	k	mnlrwyřhč	36
r	r	k	fřvdsšmnlrwyřhč	15
ř	ř	k	fřvdsšmnlrwyřhč	15
l	l	k	fřvdsšmnlrwyřhč	15
m	m	k	fřvdsšmnlrwyřhč	15
n	n	k	fřvdmnlrwyřhč	13
rřl	m s š z ž ktcčžjfvxř	b	lrwyř	225
rř	ň b g d đ	b	lrwyř	50
m	s š z ž fvxř	b	lrwyř	40
n	k t d đ s š z ž xř	b	lrwyř	50
pk	fř	b	lrwyř	20
spkfř	s	b	lrwyř	25
špkfř	š	b	lrwyř	25
zbgv	z	b	vlrwyř	24
žbgv	ž	b	vlrwyř	24
ptkrřlmnř	č	b	lrwyř	45
t m n r ř	l	b	lrwyř	25
dgv	v	b	lrwyř	15
bg	đ	b	vlrwyř	12
r	r	b	vđlrwyř	7
ř	ř	b	vđlrwyř	7
l	l	b	vđlrwyř	7
m	m	b	đlrwyř	6
ň	ň	b	vđlrwyř	7
rř	n	d	vmlrwyř	14
rř	ň	d	vlrwyř	12
rř	bg	d	vlrwyř	24
rřl	m zžžj	d	vlrwyř	90
rřl	pkdsškcčfvxřđ	d	lrwyř	195
m	psšfvxřzžđ	d	lrwyř	50
n	ksšxřzžđ	d	lrwyř	40
ň	sšfvřzžđ	d	lrwyř	40
fpk	f	d	lrwyř	15
řpk	ř	d	lrwyř	15
spkfř	s	d	lrwyř	25
špkfř	š	d	lrwyř	25
zbgv	z	d	lrwyř	20
žbgv	ž	d	lrwyř	20
ptkrřlmnř	č	d	lrwyř	45
t m n r ř	l	d	lrwyř	25

bgv	v	d	lrwyř	15
bg	đ	d	vlrwyř	12
r	r	d	vlrwyř	6
ř	ř	d	vlrwyř	6
l	l	d	vlrwyř	6
m	m	d	vlrwyř	6
n	n	d	vlrwyř	6
ň	ň	d	vlrwyř	6
rřl	m	g	vđzžlrwyř	27
rř	n	g	lrwyř	10
rřl	p t b d g f v t c č ž j đ	g	lrwyř	195
rřlmnň	sšzž	g	vđlmnrwyř	216
m	p t f v t đ	g	lrwyř	30
n	t d t đ	g	lrwyř	20
pk	f t	g	lrwyř	20
spkf t	s	g	lrwyř	25
špkf t	š	g	lrwyř	25
zbgv	z	g	vđzžmnlrwyř	44
žbgv	ž	g	vđžmnlrwyř	40
t m n r ř	l	g	lrwyř	25
ptkrřlmnň	ç	g	lrwyř	45
bg	đ	g	vlrwyř	12
bdv	v	g	vđlrwyř	21
r	r	g	vđlrwyř	7
ř	ř	g	vđlrwyř	7
l	l	g	vđlrwyř	7
m	m	g	vđlrwyř	7
n	n	g	vđlrwyř	7
rřln	k	f	ptk b d g f m n ň l r w y ř	60
rřl	p	f	t k b d g f m n ň l r w y ř	42
rřlmnň	t t s š z ž	f	lrwyř	180
m	k	f	lrwyř	5
rřlmň	f	f	ptk b d g t x s š đ z ž c č ž j m n ň l r w y ř	130
rřlmn	x	f	lrwyř	25
rřl	b d g c č ž j	f	m n ň l r w y ř	168
spkf t	s	f	m n ň l r w y ř	40
špkf t	š	f	m n ň l r w y ř	40
zbgv	z	f	m n ň l r w y ř	32
žbgv	ž	f	m n ň l r w y ř	32
t m n r ř	l	f	lrwyř	25
pk t	t	f	lrwyř	15
r	r	f	ptk t x s š z ž m n ň l r w y ř	17
ř	ř	f	ptk t x s š z ž m n ň l r w y ř	17
l	l	f	ptk t x s š z ž m n ň l r w y ř	17
m	m	f	ptk t x s š z ž m n ň l r w y ř	17
ň	ň	f	ptk t x s š z ž m n ň l r w y ř	17

r ř l	n ň	ř	ptk b d g f ř x v c ě m n ň l r w y ě ě	126
r ř l	m	ř	t k d g f ř x v c ě m n ň l r w y ě	54
r ř l	p	ř	t k d g f ř x v m n ň l r w y ě	48
r ř l	k	ř	ptk b d g f ř x v m n ň l r w y ě	54
p k r ř l m n ň	ř	ř	ptk b d g f x s š v c ě ž j m n ň l r w y ě	184
r ř l n	x	ř	l r w y ě	20
r ř l	b g	ř	l r w y ě	30
r ř l m n ň	s š z ž	ř	r w	48
s p k f ř	s	ř	r w	10
š p k f ř	š	ř	r w	10
z b g v	z	ř	r w	8
ž b g v	ž	ř	r w	8
s š z ž m n	p k	ř	l r w y ě	60
r	r	ř	ptk x s š v c ě ž j m n ň l r w y ě	19
ř	ř	ř	ptk x s š v c ě ž j m n ň l r w y ě	19
l	l	ř	ptk x s š v c ě ž j m n ň l r w y ě	19
m	m	ř	ptk x s š v c ě ž j m n ň l r w y ě	19
n	n	ř	ptk x s š v c ě ž j m n ň l r w y ě	19
ň	ň	ř	ptk x s š v c ě ž j m n ň l r w y ě	19
r ř	m n	x	ptk b d x v m n l r w	48
r ř l n	x	x	ptk b d x v m n l r w	48
r ř l m	p t f v ř đ	x	x m n l r w	144
r ř	b d	x	x m n l r w	24
n	ř đ	x	x m n l r w	12
s p k f r ř l m n ň	s	x	x m n l r w	60
š p k f r ř l m n ň	š	x	x m n l r w	60
z b g v r ř l m n ň	z	x	x m n l r w	60
ž b g v r ř l m n ň	ž	x	x m n l r w	60
p k	f ř	x	x m n l r w	24
r	r	x	p t m n l r w	7
ř	ř	x	p t m n l r w	7
l	l	x	p t m n l r w	7
m	m	x	p t m n l r w	7
n	n	x	p t m n l r w	7
r	ř	ř	ptk b d g f ř x v đ c ě ž j m n ň r w ě	21
m n ň	ř	ř	ptk b d g f x v m n ň r w ě	45
r ř l n	t	ř	ptk b d g f x v m n ň r w ě	64
r ř l	c ě ž j s š z ž f ř v	ř	ř	33
m n ň	s š z ž ř	ř	ř	15
m ň	f	ř	ř	2
r ř l	p t m	ř	ř	6
r ř	m n ň p k f	s	ptk b d g f ř x s v đ c ě j m n ň l r w y ě ě	288
l	m p k f	s	ptk b d g f ř x s v đ c ě j m n ň l r w y ě ě	96
m	f	s	ptk b d g f ř x s v đ c ě j m n ň l r w y ě ě	24
r ř l m n ň	ř	s	ptk b d g f s v m n ň l r w y ě ě	18
r ř	b g v	s	ptk f ř x s c ě	54

r ř l m n ň	s	s	ptkbdgfřxvđcčjmnňlrwy ř	138
r	r	s	ptkbdgfřxvđcčjmnňlrwyhř	23
ř	ř	s	ptkbdgfřxvđcčjmnňlrwyhř	23
l	l	s	ptkbdgfřxvđcčjmnňlrwyhř	23
m	m	s	ptkbdgfřxvđcčjmnňlrwyhř	23
n	n	s	ptkbdgfřxvđcčjmnňlrwyhř	23
ň	ň	s	ptkbdgfřxvđcčjmnňlrwyhř	23
r ř	m n ň p k f	š	ptkbdgfřxšvđčjmnňlrwyhř	276
l	m p k f	š	ptkbdgfřxšvđčjmnňlrwyhř	92
m	f	š	ptkbdgfřxšvđčjmnňlrwyhř	23
r ř l m n ň	ř	š	ptkbdgfřšvmnňlrwyhř	108
r ř	b g v	š	ptkřřxščwyhlř	78
r ř l m n ň	š	š	ptkbdgfřxvđčjmnňlrwy ř	132
r	r	š	ptkbdgfřxvđčjmnňlrwy ř	22
ř	ř	š	ptkbdgfřxvđčjmnňlrwy ř	22
l	l	š	ptkbdgfřxvđčjmnňlrwy ř	22
m	m	š	ptkbdgfřxvđčjmnňlrwy ř	22
n	n	š	ptkbdgfřxvđčjmnňlrwy ř	22
ň	ň	š	ptkbdgfřxvđčjmnňlrwy ř	22
b g v z	z	v	v lrwyř	24
b g v ž	ž	v	v lrwyř	24
m n r ř l	t k d ř s š z ž	v	v lrwyř	240
ň	t d ř s š z ž	v	v lrwyř	48
r ř	m ň g	v	v lrwyř	36
r ř l	m p z ž ž j b	v	v lrwyř	126
r ř l m ň	v	v	ptkbdgřxsšđzžcčžjmnňlrwy ř	130
p k ř	ř	v	v lrwyř	18
p k	s š	v	v lrwyř	24
r ř m n ň	ř	v	wy	10
r	r	v	bdgřxsšđzžcčžjmnňlrwy ř	23
ř	ř	v	bdgřxsšđzžcčžjmnňlrwy ř	23
l	l	v	bdgřxsšđzžcčžjmnňlrwy ř	23
m	m	v	bdgřxsšđzžcčžjmnňlrwy ř	23
ň	ň	v	bdgřxsšđzžcčžjmnňlrwy ř	23
r ř l	p k	d	d rwyř	30
r ř	b g m n	d	bdgd m n l rwyř	88
l	b g m	d	bdgd m n l rwyř	33
r ř l m n ň	z ž	d	d rwyř	60
r ř l	d	d	ptkbdgf x v c č ž j m n ň l r w y ř	66
ř r ř	ř	d	wy	6
r	r	d	ptkbdgf x v c č ž j m n ň l r w y ř	22
ř	ř	d	ptkbdgf x v c č ž j m n ň l r w y ř	22
l	l	d	ptkbdgf x v c č ž j m n ň l r w y ř	22
m	m	d	ptkbdgf x v c č ž j m n ň l r w y ř	22
n	n	d	ptkbdgf x v c č ž j m n ň l r w y ř	22
ň	ň	d	ptkbdgf x v c č ž j m n ň l r w y ř	22

r ř	n ň	z	ptkbdgfřxvdzjmnňlrwyř	84
r ř l	m	z	ptkbdgfřxvdzjmnňlrwyř	63
r ř l	bgv	z	bdgvđzjmnňlrwyhř	64
r ř l m n ň	z	z	ptkbdgfřxvdzjmnňlrwyļř	126
bg	z	z	ptkbdgvxdjmnňlrwyř	36
r	r	z	ptkbdgvxdjmnňlrwyř	18
ř	ř	z	ptkbdgvxdjmnňlrwyř	18
l	l	z	ptkbdgvxdjmnňlrwyř	18
m	m	z	ptkbdgvxdjmnňlrwyř	18
n	n	z	ptkbdgvxdjmnňlrwyř	18
ň	ň	z	ptkbdgvxdjmnňlrwyř	18
r ř	n ň	ž	ptkbdgfřxvdžjmnňlrwyř	84
r ř l	m	ž	ptkbdgfřxvdžjmnňlrwyř	63
r ř	bg	ž	bdgvđžjmnňlrwyhř	64
r ř l	v	ž	bdgvđžjmnňlrwyhř	48
r ř l m n ň	ž	ž	ptkbdgfřxvdzjmnňlrwyļř	126
bg	ž	ž	ptkbdgxvdjmnňlrwyř	36
r	r	ž	ptkbdgxvdjmnňlrwyř	18
ř	ř	ž	ptkbdgxvdjmnňlrwyř	18
l	l	ž	ptkbdgxvdjmnňlrwyř	18
m	m	ž	ptkbdgxvdjmnňlrwyř	18
n	n	ž	ptkbdgxvdjmnňlrwyř	18
ň	ň	ž	ptkbdgxvdjmnňlrwyř	18
ptkrřlçmnň	ç	c	mnňhlřwy	90
ptkrřlmnň	ř	c	mnňwy	45
mnňļ	ļ	c	mnňwy	20
r	r	c	mnňhlřwy	9
ř	ř	c	mnňhlřwy	9
l	l	c	mnňhlřwy	9
m	m	c	mnňhlřwy	9
ň	ň	c	mnňhlřwy	9
ptkrřlçmnň	ç	č	mnňhlřwy	90
ptkrřlmnň	ř	č	mnňwy	45
mnňļ	ļ	č	mnňwy	20
r	r	č	mnňhlřwy	9
ř	ř	č	mnňhlřwy	9
l	l	č	mnňhlřwy	9
m	m	č	mnňhlřwy	9
ň	ň	č	mnňhlřwy	9
r	r	z	mnňlrřwy	8
ř	ř	z	mnňlrřwy	8
l	l	z	mnňlrřwy	8
r	r	j	mnňlrřwy	8

ř	ř	j	mnñlrřwy	8
l	l	j	mnñlrřwy	8
r ř l	m	m	ptkbgfřxsšvdzžcčžjnlrwyhřč	84
r ř	ptkbgfvřdsšzžxlcčžjč	m	lrřwy	210
l	ptkřřsšzžxlcčžjč	m	lrřwy	75
m	fvřdsšzžxlcč	m	lrřwy	55
n	tkdřřdsšzžxlcč	m	lrřwy	60
ň	tdřřdsšzžlcč	m	lrřwy	50
spkfř	s	m	lrřwy	25
špkfř	š	m	lrřwy	25
zbgv	z	m	lrřwy	20
žbgv	ž	m	lrřwy	20
ptkč	č	m	lrřwy	20
pkř	ř	m	lrřwy	15
čsšf	t	m	wy	8
čsš	k	m	wy	6
ptř	ř	m	wy	6
r	r	m	ptkbgfřxsšvdzžcčžjnlrwyhř	27
ř	ř	m	ptkbgfřxsšvdzžcčžjnlrwyhř	27
l	l	m	ptkbgfřxsšvdzžcčžjnlrwyhř	27
r ř l	n	n	tkdgvřxsšvdzžmlrwyhřč	66
r ř	ptkbgfvřdsšzžxlcčžjč	n	wy	42
l	ptkřřsšzžxlcčžjč	n	wy	32
m	fvřsšzžxlcč	n	wy	20
n	tkdřřdsšzžxlcč	n	wy	24
ň	tdřřdsšzžlcč	n	wy	18
spkfř	s	n	wy	10
špkfř	š	n	wy	10
zbgv	z	n	wy	8
žbgv	ž	n	wy	8
čsšf	t	n	wy	8
čsš	k	n	wy	6
ptkmñrřlč	č	n	wy	20
ptmñrř	ř	n	wy	14
pkř	ř	n	wy	6
r	r	n	tkdgvřxsšvdzžmlrwyhř	21
ř	ř	n	tkdgvřxsšvdzžmlrwyhř	21
l	l	n	lrwyř	6
r ř	ň	ň	ptbdfřsšvdzžcčžjmlrwhř	48
s r ř l	s	ň	w	4
š r ř l	š	ň	w	4
z r ř l	z	ň	w	4
ž r ř l	ž	ň	w	4
ptkmñrřlč	č	ň	w	10
pkm	f	ň	w	3
pkn	ř	ň	w	3

p t m n ň r ř	l	ň	w	7
p k ř	ř	ň	w	3
r	r	ň	p t b d f ř s š v ě z ž c ě ž j m n l r w h l ř	24
ř	ř	ň	p t b d f ř s š v ě z ž c ě ž j m n l r w h l ř	24
l	l	ň	w	1
r ř l m	p t k c ě	h	w	20
n	t k	h	w	2
ň	p t c ě	h	w	4
r ř l	m n ň	h	w r	18
r	l r	h	m n w	6
l	l	h	m n w	3
ř	ř	h	m n w	3
m	m	h	w	1
n	n	h	w	1
ň	ň	h	w	1
r ř	p t k m n ň	č	p t k b d g f v c ě m n ň l r w ř č	216
l	p t k m	č	p t k b d g f v c ě m n ň l r w ř č	72
m n ň l r ř	č	č	p t k b d g f v c ě m n ň l r w ř	102
m l r ř	f	č	p t k b d g f v c ě m n ň l r w ř č	72
r	r	č	p t k b d g f v c ě m n ň l r w ř	17
ř	ř	č	p t k b d g f v c ě m n ň l r w ř	17
l	l	č	p t k b d g f v c ě m n ň l r w ř	17
m	m	č	p t k b d g f v c ě m n ň l r w ř	17
n	n	č	p t k b d g f v c ě m n ň l r w ř	17
ň	ň	č	p t k b d g f v c ě m n ň l r w ř	17
			total	14485

11. Permissible Penta-Consonantal Conjuncts Which Can Be Roots

5-Consonant Roots

1st consonant	2nd consonant	3rd consonant	4th consonant	5th consonant	Totals
l r ř	p k f	s š	p t k b d g	l r ř w y	540
l r ř	p k f	s š	p t k	h	54
l r ř	p k	f ř	p t k b d g	l r ř w y	360
l r ř	p k	f ř	p t k	h	36
l r ř	p k f	s š	f ř	l r ř w y	180
l r m n ň	s š č	p k	f	l r ř w y	150
l r ř	m	s š z ž č	ř f	l r ř w y	150
l r ř	m	s š z ž ř f č	p t k b d g	l r ř w y	630
l r ř	m	s š z ž ř f č	p t k	h f	63
l r ř	m	s š z ž č	p k	ř	60
l	m	s š z ž č	p t	l	10
l r ř	p t	l	p t k b d g	l r ř w y	180

l r ř	p t	l	p t k	h	18
l r ř	p t k	ç	p t k b d g	l r ř w y	270
l r ř	p t k	ç	p t k	h	27
l r ř	v	z ž	p t k b d g	l r ř w y	180
l r ř	v	z ž	p t k	h	18
l r ř	v	z ž	p k	ř f	24
r ř	n ň	s š z ž ř ç	p t k b d g	l r ř w y	720
r ř	n ň	s š z ž ř ç	p t k	h	72
r ř	ň	f	p t k b d g	l r ř w y	60
r ř	ň	f	p t k	h	6
r ř	n ň	s š z ž ç	p k	ř f	80
r ř	m n ň	s š z ž ç	p t	l	60
r ř	n ň	s š z ž ç	ř f	l r ř w y	200
r ř	n ň	ř	b g	l r ř w y	40
r ř	n	t	p k	l r ř h w y	24
r ř	n	k	p t	l r ř h w y	24
p k m n ň l r ř	s	s	p t k	l r ř h w y	144
p k m n ň l r ř	s	s	m n	w y	32
p k m n ň l r ř	s	s	ň	w	8
p k m n ň l r ř	š	š	p t k	l r ř h w y	144
p k m n ň l r ř	š	š	m n	w y	32
p k m n ň l r ř	š	š	ň	w	8
l r ř	p k m	s	s	p t k m n ň l r ř w y	99
r ř	n ň	s	s	p t k m n ň l r ř w y	44
l r ř	p k m	š	š	p t k m n ň l r ř w y	99
r ř	n ň	š	š	p t k m n ň l r ř w y	44
l r ř	ř f	p k	s	s	12
l r ř	m n	k	s	s	6
l r ř	ř f	p k	š	š	12
l r ř	m n	k	š	š	6
p k m n ň l r ř	ç	ç	p t k	l r ř h w y	144
p k m n ň l r ř	ç	ç	m n	w y	32
l r ř	p t k m	ç	ç	p t k m n ň l r ř w	120
r ř	n ň	ç	ç	p t k m n ň l r ř w	40
l r ř	ř	p k	ç	ç	6
l r ř	f	p t k	ç	ç	9
l r ř	m n	t k	ç	ç	12
m	m	s š ç ř ř z ž v ř	p t k	l r ř h w y	162
n	n	s š ç ř ř z ž ř	p t k	l r ř h w y	126
ň	ň	s š ç ř ř z ž v ř	p t k	l r ř h w y	162
m	m	s š ç ř ř z ž v ř	b d g	l r ř w y	135
n	n	s š ç ř ř z ž ř	b d g	l r ř w y	105
ň	ň	s š ç ř ř z ž v ř	b d g	l r ř w y	135
m	m	s š z ž	v	l r ř w y	20

n	n	sšzž	v	l r ř w y	20
ň	ň	sšzž	v	l r ř w y	20
l r ř	m	m	k	s š ç l r ř h w y	27
l r ř	m	m	p t	l l r ř h w y	42
l r ř	m	m	s š ç f ț	p t k l r ř w y	120
l r ř	m	m	s š ç f ț	m n ñ x	60
l r ř	m	m	s š ç	f ț v	27
l r ř	m	m	f	ț	3
l r ř	n	n	k	l r ř h w y	18
l r ř	n	n	t	l l r ř h w y	21
l r ř	n	n	s š ç ț	p t k l r ř w y	96
l r ř	n	n	s š ç ț	m n ñ f v x	72
l r ř	n	n	s š ç	ț	9
l r ř	ň	ň	p t	l l r ř h w y	42
l r ř	ň	ň	s š ç f ț	p t k l r ř w y	120
l r ř	ň	ň	s š ç f ț	m n ñ x	60
l r ř	ň	ň	s š ç	f ț v	27
l r ř	ň	ň	f	ț	3
l	l	s š ç f ț	p t k	l l r ř h w y	105
l	l	s š ç f ț	k	l r ř h w y	30
l	l	s š ç f ț	m n	w y	20
l	l	s š ç f ț	ň	w	5
l	l	s š ç f ț	b d g	l r ř w y	75
l	l	m	s š ç f ț	p t k b d g l r ř w y	55
l	l	m	s š ç	f ț v	9
r	r	s š ç f ț	p t k	l l r ř h w y	105
r	r	s š ç f ț	k	l r ř h w y	30
r	r	s š ç f ț	m n ñ	w y	30
r	r	m n ñ	s š ç f ț	p t k b d g l r ř w y	165
r	r	m n ñ	s š ç	f ț v	27
ř	ř	s š ç f ț	p t k	l l r ř h w y	105
ř	ř	s š ç f ț	k	l r ř h w y	30
ř	ř	s š ç f ț	m n ñ	w y	30
ř	ř	m n ñ	s š ç f ț	p t k b d g l r ř w y	165
ř	ř	m n ñ	s š ç	f ț v	27
l r ř	b g v	z ž	p t k b d g	l r ř w y	540
l r ř	b g v	z ž	p t k	h	54
l r ř	b g	v đ	b d g	l r ř w y	180
l r ř	b g v	z ž	v	l r ř w y	90
l r ř	m n ñ	z ž	b g	v đ	72
l r ř	m n ñ	z ž	d	v	18
l r ř	m ñ	v	b d g	l r ř w y	90
l r ř	n	đ	b d g	l r ř w y	45
b g v m n ñ l r ř	z	z	p t k	l r ř h w y	135

bgvmnňlrř	z	z	bdgfv	lrřwy	225
bgvmnňlrř	z	z	mn	wy	45
bgvmnňlrř	z	z	ň	w	9
bgvmnňlrř	ž	ž	ptk	lrřhwy	135
bgvmnňlrř	ž	ž	bdgfv	lrřwy	225
bgvmnňlrř	ž	ž	mn	wy	36
bgvmnňlrř	ž	ž	ň	w	9
lrř	bgm	z	z	ptkbdgmnňlrřwy	126
rř	nň	z	z	ptkbdgmnňlrřwy	56
lrř	bgm	ž	ž	ptkbdgmnňlrřwy	126
rř	nň	ž	ž	ptkbdgmnňlrřwy	56
lrř	m	m	bg	zžlrřwy	42
lrř	m	m	zžvđ	ptkbdglrřwy	132
lrř	m	m	zž	mnňxfřvđ	48
lrř	m	m	v	mnňxřđ	18
lrř	m	m	đ	mnň	9
lrř	n	n	g	lrřwy	15
lrř	n	n	zžvđ	ptkbdglrřwy	132
lrř	n	n	zž	mnňxfřvđ	48
lrř	n	n	đ	mnň	9
lrř	ň	ň	bd	lrřwy	30
lrř	ň	ň	zžvđ	ptkbdglrřwy	132
lrř	ň	ň	zž	mnňxfřvđ	48
lrř	ň	ň	v	mnňxřđ	18
lrř	ň	ň	đ	mnň	9
l	l	zžvđ	ptk	řlrřhwy	84
l	l	zžvđ	k	lrřhwy	24
l	l	zžvđ	mn	wy	16
l	l	zžvđ	ň	w	4
l	l	zžvđ	bdg	lrřwy	60
l	l	m	zžvđ	ptkbdglrřwy	44
l	l	m	zž	fřvđ	8
r	r	zžvđ	ptk	řlrřhwy	84
r	r	zžvđ	k	lrřhwy	24
r	r	zžvđ	mn	wy	16
r	r	zžvđ	ň	w	4
r	r	zžvđ	bdg	lrřwy	60
r	r	m	zžvđ	ptkbdglrřwy	44
r	r	m	zž	fřvđ	8
ř	ř	zžvđ	ptk	řlrřhwy	84
ř	ř	zžvđ	k	lrřhwy	24
ř	ř	zžvđ	mn	wy	16
ř	ř	zžvđ	ň	w	4
ř	ř	zžvđ	bdg	lrřwy	60

ř	ř	m	z ž v ě	p t k b d g l r ř w y	44
ř	ř	m	z ž	f ť v ě	8
				Total:	11616