

PHONOTACTIC RULES FOR THE ITHKUIL SUCCESSOR LANGUAGE, v. 0.4

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-*, the term “affricate” or “sibilant affricate” refers to *-c-*, *-ž-*, *-č-*, and *-j-*, and the term “sibilant fricative” refers to *-s-*, *-z-*, *-š-*, *-ž-*. 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, 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
	-vce	+vce	-vce	+vce	-vce	+vce	-vce	+vce	-vce	+vce	-vce	+vce	+vce	-vce	+vce	+vce	-vce	+vce	-vce	+vce	-vce	+vce
STOP	p	b					t	d									k	g			'	
FRICATIVE			f	v					ɬ	ɖ	s	z			š	ž	x		(x)		h	l̥
AFFRICATE											c	č			č	j						
NASAL		m						n										ñ				
LIQUID	FLAP / TRILL												r									
	NON-FLAP																				l	
APPROXIMANT					w										y					ř		

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

1. General phonotactic constraints

- 1.1. Except in word-initial position in a multi-syllabic word, all syllables must contain a single vowel or a single diphthong.
- 1.2. In multi-syllabic words, a single nasal or liquid consonant may constitute a discrete syllable in word-initial position if immediately followed by a consonant with which it does not form a natural syllable-initial cluster. Examples: *mbakat*, *lkosa*, *rjeinu*, *nkori*, *rluga*.
- 1.3. 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.
- 1.4. 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, where forms such as *-eai-* are permitted).
- 1.5. Disyllabic vowel conjuncts (e.g., *ae*, *eo*, *ia*, *ou*) are permitted, but tri-syllabic vowel-conjuncts or greater are not.
- 1.6. 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 can also occur as the initial consonant of a word-final consonant conjunct (in which case it can be pronounced allophonically with a very brief (semi-)voiceless [u] following the glottal stop, e.g., *telá'ss* [te'laʔũs:]. Note that his allophonic increment [ʔũ] does not count as a separate syllable for syllabic stress purposes. The glottal stop cannot occur in word-final position except in the unusual instance of monosyllabic parsing adjuncts of the form 'V' where V is a single vowel (e.g., **a'**, **o'**, **u'**, etc.)

- 1.7. 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.
- 1.8. 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**, **z**, **č**, **j**), as these would be homophonic with the various sibilant affricates (**c**, **č**, **z**, **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 /kg/ in *backgammon*, /td/ as in *letdown*, or /pb/ as in *clipboard*, such combinations are not permitted in this language except at the boundaries of separate words. 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**, ***ʃd**, ***dʃ**, ***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. The voiced interdental fricative **-ɖ-** cannot be followed by any of the four sibilant fricatives.
- 2.7. An alveolo-palatal sibilant fricative followed by an apico-alveolar affricate is not permitted, i.e., ***šc**, ***šz**, ***žc**, ***žz**.
- 2.8. A sibilant affricate cannot be followed by **-y-**, i.e., ***cy**, ***čy**, ***zy**, ***jy**.
- 2.9. The sibilant fricative **-s-** cannot be followed by voiced affricate **-ž-**.
- 2.10. Other than geminates, any conjunction of sibilant fricatives (**s**, **z**, **š**, **ž**) is prohibited, e.g., ***sz**, ***zs**, ***šs**, etc.
- 2.11. Conjunction of a sibilant affricate followed by a sibilant fricative is prohibited, e.g., ***čs**, ***cz**, ***žz**, ***čž**, ***zs**, **js**, **jz**, **jš**, etc.
- 2.12. 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**, ***nž**, ***nj** in that they are too phonetically similar to **ns**, **nš**, **nz**, **nž**.
- 2.13. 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**, ***mbɖ**, ***mpt**, ***mbd** (vs. **mf**, **mv**, **mʃ**, **mɖ**, **mt**, **md**). The combination ***ngɖ** is likewise prohibited (but not **nkʃ**).
- 2.14. 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. **ňš**], ***ngz** [vs. **ňz**], ***mpš**, ***mbž**, ***nkš** [vs. **ňš**], ***ngž** [vs. **ňž**], etc.
- 2.15. The nasal **n-** cannot be followed by the labial stops **-p** and **-b**, as they are too likely to assimilate to **-mp-** and **-mb-**. Nor can **-n-** be followed by **-ň-**.
- 2.16. The combinations **nf**, and **nv** cannot be followed by a consonant; they must be followed by a vowel.
- 2.17. The velar nasal **-ň-** 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 **ňř** is permitted, since **-n-** does not assimilate to velar [ŋ] before **-ř-**.) Additionally, the velar nasal **ň-** cannot be followed by **-y** (as the resulting combination ***ňy** is phonetically too indistinguishable from **ny**).

- 2.18. The velar/uvular fricative **-x-** cannot be followed by any sibilant fricative (**s, z, š, ž**), **-g-**, **-l-**, **-ň-**, **-y-**, **-h-** or **-ř-**.
- 2.19. The lateral fricative **-l-** cannot be preceded by a voiced stop or by **-h-**. It cannot be followed by any sibilant fricative or by **-h-**.
- 2.20. As the final member of a consonant conjunct, **-h-** cannot be preceded by the lateral fricative **-l-** nor the velar/uvular fricative **-x-** (as these two fricatives are too “breathy” in timbre to be able to reliably distinguish a following **-h-**).
- 2.21. Neither **-r-** nor the fricative **-h-** can be followed by uvular approximant **-ř-**.
- 2.22. The uvular approximant **-ř-** cannot be followed by **-r-**.
- 2.23. 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., **pf, bv, pť, bđ, pl, px, ph, tf, dv, tx, tl, th, kf, gv, kť, gđ, 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, stops cannot be followed by a nasal, e.g., ***pm, *bn, *pň, *tn, *dm, *tň, *km, *kň, *gm**, 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. The fricative **-x-** may be followed by **-p, -t, -c, -č, -k, -m, -n, -l, -r,** or **-w**.
- 3.2.4. Word-initial fricatives **f, v, ř,** and **đ** may be followed by any liquid, approximant, or nasal. They may also be followed by any stop consonant or affricate of the same voicing.
- 3.2.5. 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**.
- 3.2.6. Word-initial **h-** can be followed by a semi-consonant, a liquid, or the nasals **-m** or **-n**.
- 3.2.7. Word-initial nasals **m-** and **n-** may be followed by a liquid (**l, r**) or an approximant (**w, y, ř**). (NOTE: Any other consonant besides the glottal-stop may follow a word-initial nasal, but in such case, the nasal will constitute a separate consonant-only syllable). The same rules apply to the velar nasal **-ň-** except that it cannot be followed by **-y-** or **-ř-**.
- 3.2.8. Word-initial liquids **l-** and **r-** may be followed by the semiconsonants **-w** or **-y**. NOTE: Any other consonant besides the glottal-stop may follow a word-initial liquid, but in such case, the liquid will constitute a separate consonant-only syllable.
- 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. Bi-consonantal conjuncts beginning with **p-** or **k-** followed by **-f** or **-ť** may take a following **-y** or **-w**. The forms **pl-**, and **tl-** may be followed by **-w**.

- 3.3.3. Word-initial sibilant fricatives (**s, z, š, ž**) 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 semiconsonant(s) (**-w** or **-y**) is/are permitted to follow that nasal in a bi-consonantal conjunct per the rules above.
- 3.3.4. Word-initial conjuncts beginning with **l-** plus a voiceless stop may take a following approximant or liquid. If the initial **l-** is followed by a nasal, the third consonant must be whichever semiconsonant(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**, the special form **hyw** (pronounced [çw]), 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 **tl-** may take a following **-w** or **-y** to form **flw-, tlw-, fly-** and **fly-**. 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. NOTE: Word-initial tri-consonantal conjuncts beginning with nasals, or liquids (e.g., **mpr-, ltw-, rks-**) are only permitted where the initial consonant is a separate syllable (i.e., a syllabic consonant).
- 3.3.10. [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-, pstr-**, 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 1.7.)
- 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 1.7. 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 **ʃ**, and **ʒ** 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 **l** 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 1.7. They cannot be followed by any other consonant in word-final position.
- 4.2.9. The nasal **ñ** may be followed by any dental stop or any fricative except **x** or **ʃ**. 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 (**ʔ**, **w**, **y**). If followed by **h**, see the rule in paragraph 1.7.
- 4.2.11. The liquid **-l-** may be followed by any consonant except **ʔ**, **w**, **y**, **r** or **ñ**. If followed by **h**, see the rule in paragraph 1.7.
- 4.2.12. Any geminated consonant may appear in word-final position except for a geminated stop.

4.3. -CCC#: **[to be determined]**

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 VIII **C_A** complex, if phonotactically permissible (see Sec. 3.8 of version 0.8.4 of the Design Document). Rules detailing which such tetra-consonantal conjuncts can appear in word-final position will be added to this document as soon as the author gets his lazy ass in gear and does so.

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 tables below following this outline)
- 5.4. -CCCC-: (See tables below following this outline)
- 5.5. -CCCCC-: (See table at the end of this document)

6. Consonant Conjuncts containing geminates **[forthcoming]**

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).

Here follows a chart showing the 25 mono-consonantal **C_R** roots, the 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 Consonant ↓	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	
	p	t	k	b	d	g	f	ɬ	x	v	ɖ	h	ɟ	s	š	z	ž	c	č	ž	j	l	r	w	y	ř	m	n	ň	
1	p																													28
2	t																													18
3	k																													26
4	b																													28
5	d																													18
6	g																													26
7	f																													28
8	ɬ																													28
9	x																													19
10	v																													28
11	ɖ																													24
12	ɟ																													24
13	s																													25
14	š																													24
15	z																													26
16	ž																													24
17	c																													23
18	č																													21
19	ž																													23
20	j																													21
21	l																													29
22	r																													28
23	ř																													28
24	m																													29
25	n																													22
26	ň																													25
																														643

Twenty-five of the 26 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 No. 12, -ɟ- by itself, cannot be a C_R root or C_S affix but can combine with other consonants.

Also: No root can begin with h-.

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-.

INTERVOCALIC TRICONSONANTAL COMBINATIONS PERMISSIBLE AS C_R ROOTS AND C_S 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	p t k d g f ɬ x s v ɖ h ɟ s š z ž c č ž j m n l r w y h ɟ ř	54
l	p	p t k d g f ɬ x s š ɖ c č ž j m n l r w y h ɟ ř	24
m	p	d g m n l r w y h ɟ ř	11
ň	p	ɬ l r w y ɟ ř	7
s š	p	f ɬ s š l r w y ɟ ř	20
p k t c č g d ž j z ž	p	l r w y ɟ ř	66
f v x ɬ ɖ	p	l r w y ɟ ř	30
ɟ	p	l r w y ř	5
l r ř	t	p t k b g f x v m n l r w y h ɟ ř	51

n	t	p k b g f v m n l r w y h ĺ ř	15
ň s š	t	f v m n l r w y ĺ ř	30
m	t	f v l r w y ĺ ř	8
p k t c ě g b ž j z ž	t	l r w y ĺ ř	66
f v x ť	t	l r w y ĺ ř	24
ĺ	t	l r w y ř	5
l r ř	k	p t k b d f ť s š v d z ž c ě ž j m n l r w y h ř	75
n	k	p t b d f ť v d z ž c ě ž j m n l r w y h ř	22
m f v ť d	k	f ť v l r w y ř	40
s š	k	f ť s š v m n l r w y ř	24
ĺ	k	l r w y ř	5
p t c ě b d ž j z ž k	k	l r w y ř	55
r ř	b	t k b d g f ť s š v d z ž c ě ž j n l r w y h ř	48
l	b	v d z ž n l r w y ř	10
m ň s š z ž k t c ě g d ž j f v x ť d	b	l r w y ř	95
b	b	v l r w y ř	6
ĺ	b	l r w y ř	5
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 ň	d	v l r w y ř	12
s š f v x ť c ě ž j d	d	l r w y ř	55
z ž	d	v l r w y ř	12
ĺ	d	l r w y ř	5
p k b g	d	l r w y ř	20
d	d	v l r w y ř	6
r ř	g	p t b d g f ť s š v d z ž c ě ž j m n l r w y ř	48
l	g	v d m n z ž l r w y ř	11
n p t b d f v ť c ě ž j d	g	l r w y ř	65
m	g	v d z ž l r w y ř	9
g	g	v l r w y ř	6
s š z ž	g	v d l r w y ř	28
ĺ	g	l r w y ř	5
l r ř	f	p t k b d g f ť x s š d z ž c ě ž j m n ň l r w y h ĺ ř	84
m ň	f	p t k b d g f c ě m n ň l r w y h ĺ ř	38
p t k	f	p t k b d g f m n ň l r w y ř	45
s š z ž x ť b d g c ě ž j	f	l r w y ř	65
f	f	p t k b d g ť x s š d z ž c ě ž j m n ň l r w y h ĺ ř	27
ĺ	f	f l r w y ř	6
r l ř	ř	p t k b d g f ť x s š v c ě ž j m n ň l r w y h ř	75
n ň	ř	p t k b d g f ť x v c ě m n ň l r w y h ř	42
m	ř	t k d g f ť x v c ě m n ň l r w y h ř	19
s š z ž	ř	r w	8
x b g	ř	l r w y ř	15
ř	ř	p t k b d g f x s š v c ě ž j m n ň l r w y h ř	24
p k	ř	p t k b d g f ť x v m n ň l r w y ř	36
ĺ	ř	ř l r w y ř	6
r l ř	x	p t b d f ť x v d c ě ž j m n l r w	54

nm	x	ptkbdxvmlrw	24
ptbdcčzjfv ťdsšzžl	x	xw	34
x	x	ptbdfťvđcčžjmlrw	17
rř	l	ptkbdgfťxlvđcčžjmnřrwř	44
ll	l	ptkbdgfťxvđcčžjmnřrwř	42
mnň	l	ptkbdgflv mnřrwř	48
pt	l	ptkbdgflv mnřrwř	32
cčzjsšzžfťvd	l	l	12
rřl mnňpkf	s	ptkbdgfťxsvđcčjmnřlrwyhř	216
bgv	s	ptkfťxscč	27
ť	s	ptkbdgfsv mnřlrwyhř	18
s	s	ptkbdgfťxvđcčjmnřlrwyhlř	24
rřl mnňpkf	š	ptkbdgfťxšvđčjmnřlrwyhř	207
bgv	š	ptkfťxščwyhlř	39
ť	š	ptkbdgfšv mnřlrwyhř	18
š	š	ptkbdgfťxvđčjmnřlrwyhlř	23
rř	v	ptkbdgťxsvđzžcčžjmnřlrwyhlř	56
l	v	bdgvđzžjmnřlrwyř	17
mň	v	vlrwyř	12
ptkdzžžj	v	vlrwyř	48
bg	v	bdgvmlrwyř	22
v	v	ptkbdgťxsvđzžcčžjmnřlrwyhlř	27
l	v	wy	2
rř	đ	ptkbdgf xvđcčžjmnřlrwyhlř	24
l	đ	bdgđmnrwyř	10
nmň	đ	ptkbdgf xvđm nřlrwyř	54
pk	đ	đrwyř	10
bg	đ	bdgđmlrwyř	22
zž	đ	đrwyř	10
đ	đ	ptkbdgf xvcčžjmnřlrwyhlř	23
l	đ	wy	2
rřlnmň	z	ptkbdgfťxhvđzžjmnřlrwyř	138
bgv	z	bdgvđzžjmnřlrwyhř	51
z	z	ptkbdgfťxvđcčžjmnřlrwyhlř	25
rřlnmň	ž	ptkbdgfťxhvđžjmnřlrwyř	132
bgv	ž	bdgvđžjmnřlrwyhř	48
ž	ž	ptkbdgfťxvđčjmnřlrwyhlř	23
rřl	c	ptkbdgfťxvđcčjmnřlrwhlř	69
c	c	ptkbdgfťxvđčjmnřlrwlř	21
rřl	č	ptkbdgfťxvđčmnřlrwhlř	63
č	č	ptkbdgfťxvđm nřlrwlř	19
rřl	ž	ptkbdgfťxhvđžjmnřlrwř	66
ž	ž	ptkbdgfťxvđm nřlrwlř	19
rřl	j	ptkbdgfťxhvđjmnřlrwř	60

j	j	ptk b d g f t x v d m n ě l r w ě ř	19
r ě	m	ptk b d g f t x s š v d z ž c č ž j m n l r w y h ě ř	56
ptk b d g f v t d s š z ž x ě c č ž j	m	w y	40
m	m	ptk b d g f t x s š v d z ž c č ž j n l r w y h ě ř	27
r ě	n	t k d g f t x s š v d z ž m n l r w y h ě ř	44
l	n	t d k g t d s š z ž l r w y	14
ptk b d g f v t d s š z ž x ě c č ž j	n	w y	40
n	n	t k d g f t x s š v d z ž m l r w y h ě ř	21
r ě	ň	pt b d f t s š v d z ž c č ž j m n ě l r w h ě ř	46
l	ň	ň w	2
ň	ň	pt b d f t s š v d z ž c č ž j m n l r w h ě ř	22
l	l	ptk b d g f t x s š v d z ž c č ž j m n ě r w y h ě ř	27
r ě	l	l w y h ě ř	10
ptk b d g f t x s š v d z ž c č ž j m n ě	l	l	22
r	r	ptk b d g f t x s š v d z ž c č ž j m n ě l w y h ě ř	27
ptk b d g f t x s š v d z ž c č ž j m n ě l ě	r	r	24
ř	ř	ptk b d g f t x s š v d z ž c č ž j m n ě l w y h ě ř	27
ptk b d g f t s š v d z ž c č ž j m n ě l ě	ř	ř	23
ptk b d g m n ě ř r l	h	w	12
ptk b d g m n ě ř r l	h	y	12
ptk b d g m n ě r l	h	r	11
		TOTAL	4096

NOTE: In addition to the above-listed forms, the following 14 forms are permissible as tri-consonantal conjuncts in the language but cannot be a C_R root form or a C_S affix form:

-hll-, -hrr-, -hmm-, -hnn-, -hyw-, -hhy-, -hlw-, -hrw-, -hmw-, -hnw-, -hly-, -hry-, -hmy-, -hny-.

PHONOTACTIC RULES FOR INTERVOCALIC TRI-CONSONANTAL CONJUNCTS

Rule 1: The combination of a liquid or ř plus a voiceless stop may be followed by any consonant except -ň or the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

liquid or ř + voiceless stop + any consonant except -ň or the glottal-stop

l r ř	p t k	p t k b d g f ʧ x s š v ɟ z ž h ʎ c č ž j l r w y ř m n
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Per the rules in Sec. 2, forms resulting from the above rule which end in the following conjuncts are impermissible: **-pb, -td, -tʧ, -tɟ, -ts, -tš, -tɻ, -tz, -tž, -tc, -tč, -tj, -kg, -kx.**

The following are also impermissible exceptions to the above rule: **lpv, lpz, lpž.**

Rule 2: The combination of a liquid or ř plus a voiced stop may be followed by any consonant except -ň, -x, -ʎ, or the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above): any stop or any fricative or any affricate or any liquid or any approximant or any non-velar nasal.

r or ř + voiced stop + any consonant except -ň or -x or -ʎ or the glottal-stop

r ř	b d g	p t k b d g f ʧ s š v ɟ z ž h c č ž j l r w y ř m n
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Per the rules in Sec. 2, forms resulting from the above rule which end in the following conjuncts are impermissible: **-bp, -dt, -dʧ, -dɟ, -ds, -dš, -dɻ, -dz, -dž, -dc, -dč, -dj, -gk, -gx.**

The following are also impermissible exceptions to the above rule: **rbm, řbm, rgh, řgh.**

Rule 3: The combination l plus a voiced stop may be followed by any of the following (except where the resulting conjunct is impermissible per the rules in Sec. 2 above): v or ɟ or a voiced sibilant fricative or a liquid or an approximant or a non-velar nasal.

l + voiced stop + v or ɟ or voiced sibilant fricative or liquid or approximant or a non-velar nasal

l	b d g	v ɟ z ž l r w y ř m n
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Per the rules in Sec. 2, the following forms resulting from the above rule are impermissible: **ldɟ, ldz, ldž.**

The following is also an impermissible exception to the above rule: **lbm.**

Rule 4: The combination of a liquid or ř plus a voiceless fricative (except -h-) or a voiceless affricate may be followed by any consonant but the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

liquid or ř + voiceless fricative (except -h-) or voiceless affricate + any consonant except the glottal-stop

l r ř	f ʧ x s š ʎ c č	p t k b d g f ʧ x s š v ɟ z ž h ʎ c č ž j l r w y ř m n ʎ
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Per the rules in Sec. 2, forms resulting from the above rule which end in the following conjuncts are impermissible: **-fv, -tɻ, -tj, -tž, -xg, -xs, -xš, -xz, -xž, -xň, -xy, -xh, -xʎ, -xř, -sš, -sz, -sž, -sž, -šs, -šz, -šž, -šč, -šž, -cs, -cš, -cz, -cž, -cž, -cy, -čs, -čš, -čz, -čž, -čc, -čž, -čj, -čy, -ʎs, -ʎš, -ʎz, -ʎž, -ʎh, -šs, -šz, -šž, -šč, -šž, -cs, -cš.**

Forms ending in the following are also impermissible exceptions to the above rule: **-tʎ, -xk, -sʎ, -šʎ, -ʎl, -ʎy.** The form **lʎl** is also impermissible.

Rule 5: The combination of a liquid or ř plus a voiced sibilant fricative or voiced sibilant affricate may be followed by any consonant except the glottal stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

liquid or ř + voiced sibilant fricative or voiced affricate + any consonant except -l- or the glottal-stop

l r ř	z ž ž j	p t k b d g f ʧ x s š v ɖ z ʒ h ʎ c ʧ ž j l r w y ř m n ň
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Per the rules in Sec. 2, forms resulting from the above rule which end in the following conjuncts are impermissible: **-zs, -zš, -zž, -žs, -žš, -žz, -žc, -žč, -žž, -žs, -žš, -žz, -žž, -žc, -žy, -js, -jš, -jz, -jž, -jc, -jč, -jž, -jy.**

Forms ending in the following are also impermissible exceptions to the above rule: **-zc, -zč.**

Rule 6: The combination of r or ř plus a voiced sibilant fricative or voiced sibilant affricate may be followed by any consonant except the glottal stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

r or ř + voiced non-sibilant fricative + any consonant except the glottal-stop

r ř	v ɖ	p t k b d g f ʧ x s š v ɖ z ʒ h ʎ c ʧ ž j l r w y ř m n ň
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Per the rules in Sec. 2, forms resulting from the above rule which end in the following conjuncts are impermissible: **-vf, -ɖf, -ɖs, -ɖš, -ɖz, -ɖž.**

Rule 7: The combination l plus a voiced non-sibilant fricative may be followed by any of the following (except where the resulting conjunct is impermissible per the rules in Sec. 2 above): a voiced stop or a voiced fricative or a voiced affricate or a liquid or an approximant or a nasal.

l + voiced non-sibilant fricative + voiced stop or voiced fricative or voiced affricate or liquid or approximant or nasal

l	v ɖ	b d g v ɖ z ʒ ž j l r w y ř m n ň
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Per the rules in Sec. 2, the following forms resulting from the above rule are impermissible: **lɖz, lɖž, lɖz, lɖž.**

The following forms are also impermissible exceptions to the above rule: **lɖv, lɖž, lɖj.**

Rule 8: The combination of a liquid or ř plus a non-velar nasal may be followed by any consonant except the glottal stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

liquid or ř + non-velar nasal + any consonant except the glottal-stop

l r ř	m n	p t k b d g f ʧ x s š v ɖ z ʒ h ʎ c ʧ ž j l r w y ř m n ň
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As per Sec. 2, forms resulting from the above rule which end in the following conjuncts are impermissible: **-np, -nb, -nc, -nč, -nž, -nj, -nň.**

The following forms are also impermissible exceptions to the above rule: **lnf, lnv, lnx, lnm, lnn, lnh, lnʎ, and any form ending in -mň.**

Rule 9: The combination of a r or ř plus a the velar nasal ň may be followed by any non-velar consonant except the glottal stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

liquid or ř + non-velar nasal + any non-velar consonant except the glottal-stop

r ř	ň	p t b d f ʧ s š v ɖ z ʒ h ʎ c ʧ ž j l r w y ř m n ň
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Rule 10: The combination **lň** may only be followed by **-w**, or **-ň**.

lň + **w** or **ň**

lň	w ň
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Rule 11: A geminated liquid or geminated-ř may be followed by any consonant except the glottal stop, except where the resulting conjunct is impermissible per Sec. 1.8 above (i.e., it results in a trio of the same consonant), or where the resulting conjunct is impermissible per the rules in Sec. 2 above.

geminated liquid or **geminated-ř** + any consonant except the **glottal-stop**

ll rr řř	p t k b d g f ɟ x s š v ɸ z ž h ʔ c č ž j l r w y ř m n ň
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As per Sec. 1.8, trios of the same consonant resulting from the above rule are impermissible: **lll**, **rrr**, **řřř**. Additionally, per the rules in Sec. 2, forms ending in **-rř** or **-řr** are impermissible.

The following form is also an impermissible exception to the above rule: **llj**.

Rule 12: The combination of **r** or **ř** plus **l** may be followed by any approximant or by **l** or by **h**.

r or **ř** + **l** + any **approximant** or **l** or **h**

r ř	l	h l w y ř
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Rule 13: The combination of a nasal plus a homologous voiceless stop may be followed by a stop or a non-velar fricative or an affricate or a liquid or an aproximant or a non-velar nasal (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

nasal + **homologous voiceless stop** + **stop** / **non-velar fricative** / **affricate** / **liquid** / **approximant** / **non-velar nasal**

mp nt nk	p t k b d g f ɟ s š v ɸ z ž h ʔ c č ž j l r w y ř m n ň
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As per Sec. 2, the following forms resulting from the above rule are impermissible: **mpt**, **mpf**, **mpɟ**, **mpb**, **nts**, **ntš**, **ntɟ**, **ntz**, **ntž**, **ntc**, **ntč**, **ntž**, **ntj**, **-nkg**, **-nkɟ**.

The following forms are also impermissible exceptions to the above rule: **mpp**, **mpk**, **mpv**, **mpɸ**, **mpz**, **mpž**, **mpc**, **mpč**, **mpž**, **mpj**, **ntt**, **nkk**.

Rule 14: The combination of a nasal plus a heterologous voiceless stop may be followed by a voiceless non-back fricative or a liquid or an approximant or a non-velar nasal (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

nasal + **heterologous voiceless stop** + **v** / **voiceless non-back fricative** / **liquid** / **approximant** / **non-velar nasal**

mt mk ňp ňt	f ɟ v ʔ l r w y ř m n
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As per Sec. 2, the following forms resulting from the above rule are impermissible: **mtf**, **ňtf**, **mkɟ**.

The following forms are also impermissible exceptions to the above rule: **mtm**, **mtn**, **mkm**, **mkn**, **ňpf**, **ňpv**, **ňpm**, **ňpn**.

Rule 15: The combination of a nasal plus a (phonotactically permitted per Sec. 2) voiced stop may be followed by a voiced fricative or a liquid or an approximant or **-m** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

nasal + permitted voiced stop + voiced fricative / liquid / approximant / m

mb ňb nd md ňd mg ng	v ɟ z ʒ l r w y ř m
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As per Sec. 2, the following forms resulting from the above rule are impermissible: **mbv, mbɟ, mbz, mbž**, and any forms ending in **-ɟɟ, -ɟz, -ɟž**.

The following forms are also impermissible exceptions to the above rule: **ňbv, ňbɟ, ňbz, ňbž, mbm, ngv, ngɟ, ngz, ngž, ngm**.

Rule 16: The combination of a nasal plus a (phonotactically permitted per Sec. 2) voiceless fricative may be followed by any consonant except sibilant fricatives, voiced affricates, the glottal-stop or **-ɟ** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

nasal + permitted voiceless non-sibilant fricative + any consonant except sibilant fricatives, voiced affricates, -ɟ-, glottal-stop.

m n ň	f ʧ x ɭ	p t k b d g f ʧ x v h ɭ c ʧ l r w y ř m n ň
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As per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-fv, -xg, -xh, -xy, -xň, -xɭ, -xř, -ɭh**. Sec. 2 likewise prohibits any forms beginning with **ňx-** or **nx-**.

The following forms are also impermissible exceptions to the above rule: **mɟp, mɟb**, and any form ending in **-fɟ, -fx, -ɟɭ, -ɟř, -ɭc, -ɭč, -ɭy, -xf, -xɟ, -xc, -xč**.

Rule 17: The combination of a nasal plus a sibilant fricative or **-ɟ-** may be followed by any consonant except **ɭ** or the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

nasal + sibilant fricative or ɟ + any consonant except the glottal-stop.

m n ň	s š z ʒ ɟ	p t k b d g f ʧ x s š v ɟ z ʒ h c ʧ ž j l r w y ř m n ň
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As per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-ɟs, -ɟz, -ɟš, -ɟž, -ɟɟ, -sš, -sz, -sž, -šs, -šz, -šž, -šč, -šž, -zs, -zž, -žs, -žz, -žž**.

Forms ending in the following are also impermissible exceptions to the above rule: **-ɟc, -ɟč, -ɟž, -ɟj, -ɟh, -zc, -zč, -žc, -žč**.

Rule 18: Geminated nasals may be followed by any consonant except the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

geminated nasal + any consonant except the glottal-stop or -ň.

mm mn ňň	p t k b d g f ʧ x s š v ɟ z ʒ h ɭ c ʧ ž j l r w y ř m n
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As per Sec. 2, the following forms resulting from the above rule are impermissible: **nnc, nnč, nnž, nnj, nnp, nnb, ňňk, ňňg, ňňx, ňňy**. The following strings of three identical consonants are prohibited per Sec. 1.8: **mmm, nnn, ňňň**.

Rule 19: A nasal plus **-v-** may be followed by a liquid, an approximant, or **-v**.

nasal + v + a liquid or approximant or -v.

m ň	v	v l r w y ř
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Per Sec. 2, tri-consonantal conjuncts beginning with **nv-** are prohibited.

Rule 20: A voiceless sibilant fricative plus a voiceless stop may be followed by a voiceless non-back fricative, a liquid, an approximant, a non-velar nasal, or -v (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

voiceless sibilant fricative + voiceless stop + voiceless non-back fricative / liquid / approximant / non-velar nasal / v

s š	p t k	f ʧ s š l r w y ʎ ř
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Per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-tʧ, -ts, -tš, -kʎ**.

Forms ending in the following are also impermissible exceptions to the above rule: **-pv, -pm, -pn**.

Rule 21: A sibilant fricative plus voiced stop may be followed by a voiced non-sibilant fricative, a liquid, or an approximant (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

sibilant fricative + voiced stop + voiced non-sibilant fricative / liquid / approximant

s š z ž	b d g	v ɖ l r w y ř
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Per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-dɖ**.

The following forms are also impermissible exceptions to the above rule: **sdv**, and forms ending in **-bv, -bɖ**.

Rule 22: A geminated sibilant fricative may be followed by any consonant except a sibilant fricative or the glottal stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

geminated sibilant fricative + any consonant except a sibilant fricative or the glottal-stop

ss šš zz žž	p t k b d g f ʧ x v ɖ c č ž j l r w y h ʎ ř m n ň
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Per Sec. 2, the following forms resulting from the above rule are impermissible: **ssž, ššc, ššž, žžc, žžž**.

Rule 23: Any stop or any affricate or any voiced sibilant fricative followed by a voiceless stop may be followed by a liquid, an approximant, or -ʎ (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

stop / affricate / voiced sibilant fricative + voiceless stop + liquid / approximant / ʎ

p t k b d g c č ž j z ž	p t k	l r w y ř ʎ
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Per Sec. 2, the following forms resulting from the above rule are impermissible: forms beginning with **bp-, dt-, gk-**, as well as forms ending with **-kʎ**.

Rule 24: The voiceless lateral fricative ʎ followed by a stop may be followed by a liquid or an approximant.

voiceless lateral fricative + stop + liquid / approximant

ʎ	p t k b d g	l r w y ř
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Rule 25: The voiceless lateral fricative **ɭ** followed by a voiceless labiodental fricative or a voiceless interdental fricative may be followed by a liquid, an approximant, or the same preceding fricative.

voiceless lateral fricative + **f / ɸ** + **liquid** or **approximant** or the same preceding fricative

ɭ	f ɸ	l r w y ř f/ɸ
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Rule 26: The voiceless lateral fricative **ɭ** followed by a voiced labiodental fricative or a voiced interdental fricative or a non-velar nasal may be followed by a semiconsonant.

voiceless lateral fricative + **v or ɸ** or a **non-velar nasal** + **semi-consonant**

ɭ	v ɸ m n	w y
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Rule 27: The voiceless lateral fricative **ɭ** followed by **r** or **ř** may only be followed by the same preceding consonant.

voiceless lateral fricative or **non-velar nasal** + **r** or **ř** + the same preceding consonant

ɭ	r ř	r / ř
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Rule 28: A geminated voiceless lateral fricative **ɭ** may be followed by any consonant except a sibilant fricative, **h**, **y**, **l**, or **ɭ**.

geminated ɭ + any consonant except a **sibilant fricative**, **h**, **y**, **l**, or **ɭ**

ɭɭ	p t k b d g f ɸ x v ɸ c č ž j r w ř m n ň
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Rule 29: A labiodental fricative or interdental fricative or **x** may be followed by a liquid, an approximant or **ɸ** or **ɭ** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

labiodental fricative / interdental fricative / x + **voiceless stop** + **liquid / approximant / ɸ / ɭ**

f v x ɸ ɸ	p t k	ɸ ɭ l r w y ř
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Per Sec. 2, forms resulting from the above rule which end in **-kɭ** are impermissible.

Forms beginning with **ɸt-** or **xk-** are also impermissible exceptions to the above rule.

Rule 30: A stop or labiodental fricative or interdental fricative or affricate or **x** may be followed by a liquid, an approximant or **ɸ**, **h**, or **ɭ** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

stop / labiodental fricative / interdental fricative / affricate / x + **voiced stop** + **liquid** or **approximant**

p t k b d g f ɸ x v ɸ c č ž j	b d g	l r w y ř
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Per Sec. 2, forms resulting from the above rule which begin in **pb-**, **td-**, **kg-** or **xg-** are impermissible.

Rule 31: A geminated voiced stop may be followed by **-v**.

geminated voiced stop + **v**

bb dd gg	v
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Rule 32: A geminated affricate may be followed by any consonant except a sibilant fricative, **-h**, or the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 1.8 or Sec. 2 above).

geminated affricate + any consonant except a **sibilant fricative**, **-h**, or the **glottal-stop**

cc čč žž jj	p t k b d g f ʧ x v ɟ ʎ c č ž j l r w y ř m n ň
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Per Sec. 1.8 and Sec. 2, the following forms resulting from the above rule are impermissible: **ccc, ccž, čcc, ččč, ččž, ččj, žžc, žžž, jjc, jjč, jjž, jjj, ccy, ččy, žžy, jjy, ɟɟ, ɟɟɟ**.

The forms **žžč** and **žžj** are also impermissible exceptions to this rule.

Rule 33: A geminated labiodental fricative or geminated interdental fricative or geminated **x** may be followed by any consonant except the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 1.8 or Sec. 2 above).

geminated labio-dental fricative or **interdental fricative** or **xx** + any consonant except the **glottal-stop**

ff vv ʧ ɟ xx	p t k b d g f ʧ x s š h ʎ v ɟ z ž c č ž j l r w y ř m n ň
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Per Sec. 1.8 and Sec. 2, the following forms resulting from the above rule are impermissible: **fff, ffv, ʧʧ, ʧɟ, ɟɟs, ɟɟš, ɟɟz, ɟɟž, xxg, xxx, xxs, xxš, xxz, xxž, xxň, xxy, xxh, xxʎ, xxř, vvf, vvv**.

The forms **ʧʧz, ʧʧž, ʧʧʎ**, and **xxk** are also impermissible exceptions to this rule.

Rule 34: A voiceless stop followed by a voiceless labiodental fricative or voiceless interdental fricative or voiceless lateral fricative may be followed by any consonant except a sibilant fricative or affricate or **ɟ** or **h** or the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

voiceless stop + **f ʧ ʎ** + any consonant except a **sibilant fricative** or **affricate** or **ɟ** or **h** or the **glottal-stop**

p t k	f ʧ ʎ	p t k b d g f ʧ x v ʎ l r w y ř m n ň
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Per Sec. 2, forms resulting from the above rule which begin in **ʧf-** or **kʎ-** are impermissible, as well as forms ending in **-fv**.

Forms ending in **-fʧ, -fx, -fʎ, -ʧʎ, -ʎʧ, -ʎʎ**, and **-ʎy** are also impermissible exceptions to this rule.

Rule 35: A non-dental voiceless stop or **f** followed by a voiceless sibilant fricative may be followed by any consonant except a voiced sibilant fricative or **ʎ** or **ž** or the glottal-stop (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

p or **k** or **f** + **voiceless sibilant fricative** + any consonant except a **voiced sibilant fricative** or **ʎ** or **ž** or the **glottal-stop**

p k f	s š	p t k b d g f ʧ x s š h v ɟ c č j l r w y ř m n ň
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Per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-sš, -šs, -šč**.

Rule 36: The consonant **ʧ** followed by a voiceless sibilant fricative may be followed by a stop, a labio-dental fricative, a voiceless sibilant fricative, a nasal, a liquid, an approximant, and **-h** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

ʈ + **voiceless sibilant fricative** + any consonant except a **voiced sibilant fricative** or **ʎ** or **ʒ** or the **glottal-stop**

ʈ	s š	p t k b d g f s š h v l r w y ř m n ň
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Per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-šš, -šs**.

Rule 37: The nasals **m** and **n**, when followed by a semiconsonant, may be preceded by any consonant except a nasal, semiconsonant, **-h**, or the glottal-stop.

any consonant except a **nasal**, semiconsonant, **h*** or glottal-stop + **m** or **n** + a **semiconsonant**

p t k b d g f ʈ x s š ʎ v ɸ z ʒ c ě ž j l r ř	m n	w y
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* **NOTE:** Would-be forms under this rule beginning with **h-** are actually phonotactically permissible, however they cannot be **C_R** roots or **C_S** affixes.

Rule 38: The consonants **b** or **g** or **v**, when followed by **s**, may be followed by a voiceless stop, a voiceless affricate, **-f**, **-ʈ**, or **-x**.

b / g + **v** or **ɸ** + **voiced stop / voiced non-sibilant fricative / liquid / approximant / non-velar nasal / h**

b g v	s	p t k f ʈ x s c ě
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Rule 39: The consonants **b** or **g** or **v**, when followed by **š**, may be followed by a voiceless stop, a semiconsonant, **-f**, **-ʈ**, **-x**, **-š**, **-č**, **-w**, **-y**, **-h**, **-l**, or **-ř**.

b / g + **š** + **voiceless stop / semiconsonant / f / ʈ / x / š / č / w / y / h / l / ř**

b g v	š	p t k f ʈ x š č w y h l ř
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Rule 40: The consonants **b**, **g**, and **v**, when followed by either **z** or **ʒ**, may be followed by any voiced consonant or **-h** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

b / g / v + **z** or **ʒ** + **voiced consonant** or **h**

b g v	z ʒ	b d g v ɸ z ʒ ž j l r w y h ř m n ň
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Per Sec. 2, forms resulting from the above rule which end in the following are impermissible: **-zž, -ʒž, -žž**.

Rule 41: The consonants **b** or **g**, when followed by either **v** or **ɸ**, may be followed by a voiced stop, a voiced non-sibilant fricative, a liquid, an approximant, a non-velar nasal, or **-h** (except where the resulting conjunct is impermissible per the rules in Sec. 2 above).

b / g + **v** or **ɸ** + **voiced stop / voiced non-sibilant fricative / liquid / approximant / non-velar nasal / h**

b g	v ɸ	b d g v ɸ l r w y h ř m n
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Forms ending in the following are impermissible exceptions to this rule: **-vɸ, -ɸv**.

Rule 42: A sibilant fricative followed by **ʧ** may be followed by **-r** or **-w**.

sibilant fricative + **ʧ** + **r / w**

s š z ž	ʧ	r w
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Rule 43: A sibilant fricative followed by **x** may be followed by **-x** or **-w**.

sibilant fricative + **x** + **x / w**

s š z ž	x	x w
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Rule 44: A sibilant fricative followed by **ʎ** may be followed by **-ʎ**.

s / š + **ʎ** + **ʎ**

s š z ž	ʎ	ʎ
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Rule 45: A voiced sibilant fricative followed by **ɖ** may be followed by an approximant, **-r** or **-ɖ**.

z / ž + **ɖ** + **approximant / r / ɖ**

z ž	ɖ	ɖ r w y ř
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Rule 46: The stops **p** or **k**, when followed by **ɖ** may be followed by an approximant, **-r** or **-ɖ**.

p / k + **ɖ** + **approximant / r / ɖ**

p k	ɖ	ɖ r w y ř
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Rule 47: The consonants **x** or **b** or **g**, when followed by **ɖ** may be followed by a liquid or an approximant.

x / b / g + **ɖ** + **liquid or approximant**

x b g	ɖ	l r w y ř
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Rule 48: A voiced stop or voiceless sibilant fricative or affricate or **x** or **ʧ**, when followed by **f** may be followed by a liquid or an approximant.

voiced stop / sibilant fricative / affricate / x / ʧ + **f** + **liquid or approximant**

b d g x ʧ s š z ž c č ž j	f	l r w y ř
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Rule 49: A non-velar stop or labiodental fricative or interdental fricative or affricate or **ɸ**, when followed by **x** may be followed by **-x** or **-w**.

non-velar stop / labiodental fricative / interdental fricative / affricate / ɸ + **x** + **x** or **w**

p t b d f v ɸ ɸ c ɟ j	x	x w
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Rule 50: A labiodental fricative or interdental fricative or affricate, when followed by **ɸ** may be followed by **-ɸ**.

labiodental fricative / interdental fricative / affricate + **ɸ** + **ɸ**

f v ɸ ɸ c ɟ j	ɸ	ɸ
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Rule 51: A voiceless stop or voiced sibilant fricative or voiced affricate or **d**, when followed by **v** may be followed by a liquid, an approximant, or **-v**.

voiceless stop / voiced sibilant fricative / voiced affricate / d + **v** + **liquid / approximant / v**

p t k d z ʒ ʒ j	v	v l r w y ř
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Rule 52: A stop or fricative (except **h*** or **ɸ**) or affricate or nasal, when followed by **l** may be followed by **-l**.

stop / fricative (except h* or ɸ) / affricate / nasal + **l** + **l**

p t k b d g f ɸ x s š v ɸ z ʒ c ɟ j m n ň	l	l
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* **NOTE:** Would-be forms under this rule beginning with **h-** are actually phonotactically permissible, however they cannot be **C_R** roots or **C_S** affixes.

Rule 53: A stop or fricative (except **h*** or **ɸ**) or affricate or nasal, when followed by **r** may be followed by **-r**.

stop / fricative (except h* or ɸ) / affricate / nasal + **r** + **r**

p t k b d g f ɸ x s š v ɸ z ʒ c ɟ j m n ň	r	r
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* **NOTE:** Would-be forms under this rule beginning with **h-** are actually phonotactically permissible, however they cannot be **C_R** roots or **C_S** affixes.

Rule 54: A stop or fricative (except **h** or **ɸ** or **x**) or affricate or nasal, when followed by **ř** may be followed by **-ř**.

stop / fricative (except h or ɸ) / affricate / nasal + **ř** + **ř**

p t k b d g f ɸ s š v ɸ z ʒ c ɟ j m n ň	ř	ř
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Rule 55: A stop or liquid or nasal or **ř**, when followed by **h** may be followed by a semi-consonant or **-r**.

stop / fricative (except h or ɸ) / affricate / nasal + **h** + **semiconsonant** or **r**

p t k b d g l r ř m n ň	h	w y r
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Note: The resulting form **řhr** from this rule is impermissible.

LIST OF TETRA-CONSONANTAL INTERVOCALIC CONJUNCTS

(all of these can be C_R roots)

1st Consonant	2nd Consonant	3rd C.	4th Consonant	totals
r ř l	m	p	d g m n l r w y h ř	33
r ř l	ň	p	ř l r w y ř	21
s p k r ř l m n ň	s	p	f ř s ř l r w y ř	90
š p k r ř l m n ň	š	p	f ř s ř l r w y ř	90
f ř	s	p	l r w y ř	12
f ř	š	p	l r w y ř	12
r ř l	p k t c ě g d ž j z ž	p	l r w y ř	198
m	z ž	p	l r w y ř	12
n	k t z ž x ř	p	l r w y ř	36
ň	t z ž f ř	p	l r w y ř	30
r ř	f v x ř d	p	l r w y ř	60
l m	f x ř	p	l r w y ř	36
t m n r ř	ř	p	l r w y ř	25
z b g v	z	p	l r w y ř	24
ž b g v	ž	p	l r w y ř	24
p k	f ř	p	l r w y ř	24
r ř	n	t	p k b g f v m n l r w y h ř	30
r ř	ň	t	f v m n l r w y ř	20
r ř l	m	t	f v l r w y ř	24
s p k r ř l m n ň	s	t	l r w y ř	54
š p k r ř l m n ň	š	t	l r w y ř	54
r ř	p k t c ě g b ž j z ž f v x ř	t	l r w y ř	180
l	p k t c ě z ž	t	l r w y ř	42
m	z ž p	t	l r w y ř	18
n	z ž k x ř	t	l r w y ř	30
ň	z ž f ř	t	l r w y ř	24
l m	f x ř	t	l r w y ř	36
p m n r ř	ř	t	l r w y ř	25
z b g v	z	t	l r w y ř	24
ž b g v	ž	t	l r w y ř	24
p k	f ř	t	l r w y ř	24
r ř	n	k	p t b d f ř v ř d c ě ž j m n l r w y h ř	40
r ř l	p m f v ř	k	f ř s ř l r w y ř	135
n r ř l	t	k	f ř l r w y ř	28
m	f ř	k	f ř l r w y ř	14
n	ř	k	f ř l r w y ř	7
m n ň r ř l	s š	k	f ř m n l r w y ř	108
r ř l	k b d ř c ě ž j z ž	k	f ř l r w y ř	210
s p k f ř	s	k	f ř l r w y ř	35
š p k f ř	š	k	f ř l r w y ř	35
z b g m n ň v	z	k	l r w y ř	35
ž b g m n ň v	ž	k	l r w y ř	35
t m n r ř	ř	k	l r w y ř	25
p k	f ř	k	l r w y ř	20

r ř l	m s š z ž k t c ě ž j f v x ț	b	l r w y ř	225
r ř	ň b g d đ	b	l r w y ř	50
m	s š z ž f v x ț	b	l r w y ř	40
n	k t d s š z ž x ț	b	l r w y ř	45
p k	f ț	b	l r w y ř	20
spkfț	s	b	l r w y ř	25
špkfț	š	b	l r w y ř	25
z b g v	z	b	l r w y ř	20
ž b g v	ž	b	l r w y ř	20
t m n r ř	ł	b	l r w y ř	25
r ř	n	d	v m l r w y ř	14
r ř	ň	d	v l r w y ř	12
r ř	b g	d	l r w y ř	20
r ř l	p k d m s š z ž k c ě ž j f v x ț đ	d	l r w y ř	270
m	p s š f v x ț z ž đ	d	l r w y ř	50
n	k s š x ț z ž đ	d	l r w y ř	40
ň	s š f v ț z ž đ	d	l r w y ř	40
f p k	f	d	l r w y ř	15
ț p k	ț	d	l r w y ř	15
spkfț	s	d	l r w y ř	25
špkfț	š	d	l r w y ř	25
z b g v	z	d	l r w y ř	20
ž b g v	ž	d	l r w y ř	20
t m n r ř	ł	d	l r w y ř	25
r ř l	m	g	v đ z ž l r w y ř	27
r ř	n	g	l r w y ř	10
r ř l	p t b d g f v ț c ě ž j đ	g	l r w y ř	195
r ř l m n ñ	s š z ž	g	v đ l r w y ř	168
m	p t f v ț đ	g	l r w y ř	30
n	t d ț đ	g	l r w y ř	20
p k	f ț	g	l r w y ř	20
spkfț	s	g	l r w y ř	25
špkfț	š	g	l r w y ř	25
z b g v	z	g	l r w y ř	20
ž b g v	ž	g	l r w y ř	20
t m n r ř	ł	g	l r w y ř	25
r ř l n	k	f	p t k b d g f m n ñ l r w y ř	60
r ř l	p	f	t k b d g f m n ñ l r w y ř	42
r ř l m n ñ	t ț s š z ž	f	l r w y ř	180
m	k	f	l r w y ř	5
r ř l m ñ	f	f	p t k b d g ț x s š đ z ž c ě ž j m n ñ l r w y ł ř	130
r ř l m n	x	f	l r w y ř	25
r ř l	b d g c ě ž j	f	l r w y ř	105
spkfț	s	f	l r w y ř	25
špkfț	š	f	l r w y ř	25

z b g v	z	f	l r w y ř	20
ž b g v	ž	f	l r w y ř	20
t m n r ř	ř	f	l r w y ř	25
r ř l	n ň	ř	p t k b d g f ř x v c ě m n ň l r w y h ř	126
r ř l	m	ř	t k d g f ř x v c ě m n ň l r w y ř	54
r ř l	p	ř	t k d g f ř x v m n ň l r w y ř	48
r ř l	k	ř	p t k b d g f ř x v m n ň l r w y ř	54
r ř l m n ň	ř	ř	p t k b d g f x s š v c ě ž j m n ň l r w y ř	138
r ř l n	x	ř	l r w y ř	20
r ř l	b g	ř	l r w y ř	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
r ř	m n	x	p t k b d x v m n l r w	48
r ř l n	x	x	p t k b d x v m n l r w	12
r ř l m	p t c ě ž j f v ř đ	x	x w	80
r ř	b d	x	x w	8
r ř n	d	x	x w	6
n	ř đ	x	x w	4
s p k f r ř l m n ň	s	x	x w	20
š p k f r ř l m n ň	š	x	x w	20
z b g v r ř l m n ň	z	x	x w	20
ž b g v r ř l m n ň	ž	x	x w	20
r	ř	ř	p t k b d g f ř x v đ c ě ž j m n ň r w ř	21
m n ň	ř	ř	p t k b d g f x v m n ň r w ř	45
r ř l n	t	ř	p t k b d g f x v m n ň r w ř	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	m n ň p k f	s	p t k b d g f ř x s v đ c ě j m n ň l r w y h ř	288
l	m p k f	s	p t k b d g f ř x s v đ c ě j m n ň l r w y h ř	96
m	f	s	p t k b d g f ř x s v đ c ě j m n ň l r w y h ř	24
r ř l m n ň	ř	s	p t k b d g f s v m n ň l r w y h ř	18
r ř	b g v	s	p t k f ř x s c ě	54
r ř l m n ň	s	s	p t k b d g f ř x v đ c ě j m n ň l r w y ř	138
r ř	m n ň p k f	š	p t k b d g f ř x š v đ ě j m n ň l r w y h ř	276
l	m p k f	š	p t k b d g f ř x š v đ ě j m n ň l r w y h ř	92
m	f	š	p t k b d g f ř x š v đ ě j m n ň l r w y h ř	23
r ř l m n ň	ř	š	p t k b d g f š v m n ň l r w y h ř	108
r ř	b g v	š	p t k f ř x š ě w y h ř	78
r ř l m n ň	š	š	p t k b d g f ř x v đ ě j m n ň l r w y ř	132

mrřl	tkdzž	v	vlrwyř	120
ň	tdzž	v	vlrwyř	24
n	tkdzžg	v	vlrwyř	36
rř	nňg	v	vlrwyř	36
rřl	pzzžjb	v	vlrwyř	90
rřlmň	v	v	ptkbgfťxsšdžžččžjmnňlrwyļř	130
rř	ļ	v	wy	4
rřl	pk	d	d rwyř	30
rř	bg	d	bdgdmlrwyř	44
rřlmnň	zž	d	d rwyř	60
rřl	d	d	ptkbgf xvcčžjmnňlrwyļř	66
ļrř	ļ	d	wy	6
rř	nň	z	ptkbgfťxvdžjmnňlrwyř	84
rřl	m	z	ptkbgfťxvdžjmnňlrwyř	63
rř	bg	z	bdgvđžjmnňlrwyhř	64
rřl	v	z	bdgvđžjmnňlrwyhř	48
rřlmnň	z	z	ptkbgfťxvdžjmnňlrwyļř	126
rř	nň	ž	ptkbgfťxvdžžjmnňlrwyř	84
rřl	m	ž	ptkbgfťxvdžžjmnňlrwyř	63
rř	bg	ž	bdgvđžžjmnňlrwyhř	64
rřl	v	ž	bdgvđžžjmnňlrwyhř	48
rřlmnň	ž	ž	ptkbgfťxvdžžjmnňlrwyļř	126
rřl	m	m	ptkbgfťxsšvdžžččžjnlrwyhļř	81
rř	ptkbgfvťdsšzžxļcčžj	m	wy	80
l	ptkfťsšzžxļcčžj	m	wy	30
m	fvťdsšzžxļ	m	wy	20
n	tkdťdsšzžxļ	m	wy	22
ň	tdťdsšzžļ	m	wy	18
spkfť	s	m	wy	10
špkfť	š	m	wy	10
zbgv	z	m	wy	8
žbgv	ž	m	wy	8
rřl	n	n	tkdgvťxsšvdžžmlrwyhļř	63
rř	ptkbgfvťdsšzžxļcčžj	n	wy	40
l	ptkfťsšzžxļcčžj	n	wy	30
m	fvťsšzžxļ	n	wy	18
n	tkdťdsšzžxļ	n	wy	22
ň	tťdsšzžļ	n	wy	16
spkfť	s	n	wy	10
špkfť	š	n	wy	10
zbgv	z	n	wy	8
žbgv	ž	n	wy	8
rř	ň	ň	ptbdfťsšvdžžččžjmlrwhļř	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
r ř l	p t	l	l	6
r ř	p t k m n ň	h	w y r	36
l	p t k m n	h	w y r	15
			total	8744

5-Consonant Roots

l r ř	p k f	s š	p t k b d g	l r w y	432
l r ř	b g v	z ž	p t k b d g	l r w y	432
l r ř	p k	f t	p t k b d g	l r w y	288
l r ř	p k f	s š	f t	l r w y	144
l r m n ň	s š	p k	f	l r w y	80
l r ř	m	s š z ž	t f	l r w y	96
l r ř	m	s š z ž t f	p t k b d g	l r w y	432
l r ř	m	s š z ž	p k	t f	48
l r ř	v	z ž	p t k b d g	l r w y	144
l r ř	v	z ž	p k	t f	24
r ř	n ň	s š z ž t	p t k b d g	l r w y	480
r ř	ň	f	p t k b d g	l r w y	48
r ř	n ň	s š z ž	p k	t f	64
r ř	n ň	s š z ž	t f	l r w y	128
r ř	n ň	ɖ	b g	l r w y	32
r ř	n	t	p k	l r w y	16
r ř	n	k	p t	l r w y	16
				Total:	2904

I have not yet created phonotactic rules for tetra-consonantal or penta-consonantal intervocalic conjuncts.