

SAMPA-C Labeling Convention for Standard Chinese ^①

Table 1. Consonants ^②

Pinyin	IPA	SAMPA-C	Pinyin	IPA	SAMPA-C
b	p	p	z	ts	ts
p	p ^h	p_h	c	ts ^h	ts_h
m	m	m	s	s	s
f	f	f	zh	tʂ	ts`
d	t	t	ch	tʂ ^h	ts_h`
t	t ^h	t_h	sh	ʂ	s`
n	n	n	r	ʐ	z`
(a)n	n	_n	j	tɕ	ts\
l	l	l	q	tɕ ^h	ts_h
g	k	k	x	ɕ	s\
k	k ^h	k_h		ʔ	ʔ
h	x	x			
ng	ŋ	N			

Table 2. Vowel

Pinyin	IPA	SAMPA-C
a	ɑ	A
o	o	o
e	ɤ	7
i	i	i
u	u	u
ü	y	y
(zh)i	ɿ	i`
(z)i	ɪ	i\
er	ɤ	@`

^① Originally from Phonetics Lab, Institute of Linguistics, CASS; revised jointly by Speech Lab, CS, THU. All rights reserved. Apr. 21, 2000. Revised (latest), July 10, 2000.

^② Consonant – 辅音; Vowel – 元音; IPA (International Phoneme Alphabet) – 国际音标。

Table 3. Phonological Consonant[®]

Phoneme		Allophone	SAMPA-C	Phoneme		Allophone	SAMPA-C
Pinyin	IPA			Pinyin	IPA		
b	p	p	p	z	ts	ts	ts
p	p ^h	p ^h	p_h	c	ts ^h	ts ^h	ts_h
m	m	m	m	s	s	s	s
f	f	f	f	zh	tʂ	tʂ	ts`
d	t	t	t	ch	tʂ ^h	tʂ ^h	ts`_h
t	t ^h	t ^h	t_h	sh	ʂ	ʂ	s`
n	n	n	n	r	ʐ	ʐ	z`
(a)n	n	n	_n	j	tɕ	tɕ	ts\
l	l	l	l	q	tɕ ^h	tɕ ^h	ts_h
g	k	k	k	x	ɕ	ɕ	s\
k	k ^h	k ^h	k_h				
h	x	x	x				
ng	ŋ	ŋ	ŋ				

Table 4. Phonological Vowel

Phoneme		Allophone	SAMPA-C	Phoneme		Allophone	SAMPA-C
Pinyin	IPA			Pinyin	IPA		
a	A	a	a	i	i	i	i
		A	a_''			ɪ	I
		ɑ	A			j	j
		ɛ	E			ɿ	i`
		æ	{			ɿ	i\
o	O	o	o	u	u	ʊ	U
		ʊ	U			u	u
		u	u			w	w
		ə	@			ʊ	v\
e	ɤ	ɤ	ɤ	ü	Y	y	y
		e	e			ɥ	H
		E	E_r	er	ɤ	ɤ	@`
		ə	@				

[®] Phoneme – 音位; Allophone – 音位变体。

Table 5. Initials^④

Method of Articulatory	Place of Articulatory	Pinyin	IPA	SAMPA-C	Examples
塞音 Stops	唇音 Labial	b	p	p	ba, bi, bu, bai, ...
	唇齿音 Labiodental				
	舌尖音 Dentalveolar	d	t	t	de, da, di, du, ...
	卷舌音 Retroflex				
	舌面音 Dorsal				
	软腭音 Velar	g	k	k	ge, gu, ga,
塞送气 Aspirated Stops	唇音 Labial	p	p ^h	p_h	po, pa, pu, pang, ...
	唇齿音 Labiodental				
	舌尖音 Dentalveolar	t	t ^h	t_h	
	卷舌音 Retroflex				
	舌面音 Dorsal				
	软腭音 Velar	k	k ^h	k_h	ke, ku, kong, kan kun, ...
塞擦音 Affricates	唇音 Labial				
	唇齿音 Labiodental				
	舌尖音 Dentalveolar	z	ts	ts	zi, zu, zou, za, ...
	卷舌音 Retroflex	zh	tʂ	ts`	zhi, zha, zhang, ...
	舌面音 Dorsal	j	tʃ	ts\	ji, jv, jiang, ...
	软腭音 Velar				
塞擦送气 Aspirated Affricates	唇音 Labial				
	唇齿音 Labiodental				
	舌尖音 Dentalveolar	c	ts ^h	ts_h	ci, ca, cong, ...
	卷舌音 Retroflex	ch	tʂ ^h	ts`_h	zhi, chu, cha, chou, ...
	舌面音 Dorsal	q	tʃ ^h	ts_h	
	软腭音 Velar				
鼻音 Nasals	唇音 Labial	m	m	m	ma, mi, mo, men, ...
	唇齿音 Labiodental				
	舌尖音 Dentalveolar	n	n	n	na, ni, nu, neng, ...
	卷舌音 Retroflex				
	舌面音 Dorsal				
	软腭音 Velar				
擦音 Fricatives	唇音 Labial				
	唇齿音 Labiodental	f	f	f	fa, fu, fou, fang, ...
	舌尖音 Dentalveolar	s	s	s	si, su, sa, song, ...
	卷舌音 Retroflex	sh	ʃ	s`	shu, sha, shan, ...
		r	ʒ	z`	ri, ru, re, ruan, ...
	舌面音 Dorsal	x	ç	s\	xi, xia, xiang, ...
软腭音 Velar	h	x	x	ha, he, hu, hun, ...	
边音 Laterals	唇音 Labial				
	唇齿音 Labiodental				
	舌尖音 Dentalveolar	l	l	l	la, li, lu, lang, ...
	卷舌音 Retroflex				
	舌面音 Dorsal				
	软腭音 Velar				

^④ Initial – 汉语声母; Final – 汉语韵母。In addition, if there is no initial in a pinyin, we call it a **zero-initial** (零声母)。

Table 6. Finals

Articulatory Method of the first vowel	Pinyin	IPA	SAMPA-C	Examples
开 Open	a	ʌ	a_ "	ba, a,
	o	ɔ	o	po, bo, fo, ...
	e	ɛ	ɛ	e, ke, ge, he, ...
	ai	aɪ	aɪ	ai, sai, shai, ...
	ei	eɪ	eɪ	fei, hei, ...
	er	ɚ	@`	er
	ao	aʊ	AU	ao, hao, kao, ...
	ou	əu	@U	ou, hou, fou, ...
	an	an	a_n	an, fan, kan, san, ...
	en	ən	@_n	en,
	ang	aŋ	AN	ang, pang, bang, ...
	eng	əŋ	@N	beng, peng, feng, ...
	i1(zi)	ɿ	i\	zi, ci, si
	i2(zhi)	ʅ	i`	zhi, chi, shi
齐 Stretched	i	i	i	yi, bi, ji, xi, ...
	ia	iA	ia_ "	ya, qia, xia, ...
	ie	iE	iE_r	ye, qie, jie, pie, ...
	iao	iəʊ	iAU	yao, qiao, xiao, ...
	iou	iəu	i@U	
	ian	iɛn	iE_n	yan, qian, xian, ...
	in	in	i_n	yin, jin, qin, xin, ...
	iang	iəŋ	iAN	yang, xiang, qiang, ...
	ing	iŋ	iN	ying, xing, qing, ...
	iong	iʊŋ	iUN	yong, xiong, qiong, ...
合 Round	u	u	u	wu, fu, gu, hu, ...
	ua	uA	ua_ "	wa, kua, hua, ...
	uo	uɔ	uo	wo, huo, guo, duo, ...
	uai	uaɪ	uaɪ	wai, kuai, ...
	ui	uei	uei	wei, gui, ...
	uan	uan	ua_n	wan, duan, suan, ...
	uen	uən	u@_n	wen, tun...
	uang	uaŋ	uAN	wang, huang, chuang, ...
	ong	ʊŋ	UN	hong, gong, dong, ...
	ueng	uəŋ	u@N	weng, ...
撮 Protruded	ü	y	y	yu, xu, ...
	üe	yE	yE_r	yue, que, xue, ...
	üan	yæn	y{ _n	yuan, xuan, quan, ...
	ün	yn	y_n	yun, ...

Table 7. Retroflexed Finals^⑤

Articulatory Method of the First Vowel	Pinyin	IPA	SAMPA-C	Examples
开 Open	ar	ar	a`	par
	or	or	o`	mor
	er	ɤr	7`	ger
	air	ar	a`	bair
	eir	ər	@`	leir
	aor	ɑor	Ao`	daor
	our	our	ou`	gour
	anr	ar	a`	ganr
	enr	ər	@`	genr
	angr	ɑ̃r	a~`	gangr
	engr	ɛ̃r	@~`	dengr
齐 Stretched	ir	iər	i@`	jir
	(zh)i	iər	i@`	zhir,shir
	(z)i	iər	i@`	zir
	iar	iar	ia`	iar
	ier	iēr	iE_r`	jier
	inr	iər	i@`	jinr
	iaor	iaor	iAo`	jiaor
	iour	iour	iou`	qiur
	ianr	iar	ia`	jianr
	iangr	iɑ̃r	ia~`	liangr
	ingr	iɛ̃r	i@~`	ingr
	iongr	iũr	iu~`	xiongr
合 Round	ur	ur	u`	gur
	uar	ur	u`	guar
	uan	uar	ua`	tuanr
	uair	uar	ua`	guair
	ueir	uər	u@`	gueir
	uenr	uər	u@`	lunr
	uor	uor	uo`	uor
	uangr	uɑ̃r	ua~`	kuangr
	uengr	uɛ̃r	u@`	uengr
	ungr	ũr	u~`	kongr
撮 Protruded	ür	yər	y@`	yur
	ünr	yər	y@`	qunr
	üer	yE_r	yE_r`	yuer
	üanr	yar	ya`	yuanr

^⑤ Retroflexed final – 儿化韵母。

Table 8. Sound Changes

Classifications	SAMPA-C	Examples		
		in IPA	in SAMPA-C	Explanation
鼻化 Nasalized	~	ã	ɑ~	'ɑ' is nasalized.
央化 Centralized	"	ë	e"	'e' is centralized.
清化 Voiceless	_u	ŋ	n_u	'n' is voiceless.
浊化 Voiced	_v	ḍ	d_v	'd' is voiced.
圆唇化 More Rounded	_O	f _w	f_O	'f' is more rounded.
成音节 Syllabic	=	m _l	m=	'M' is syllabic.
喉化 Pharyngealized	_?\	tʕ	A_?\	'A' is pharyngealized.
送气 Aspirated	_h	p ^h	p_h	'p' is aspirated.
增音 Inserted	(+)		(N+)	'N' is inserted.
减音 Deleted	(-)		(i-)	'i' is deleted.

Table 9. Tones and Silences

Names	IPA	SAMPA-C	Examples
Silence [®]		sil	
Voiced silence		sil_v	
Neutral Tone		_0	ba0 (吧)
Tone 1		_1	ba1 (巴)
Tone 2		_2	ba2 (拔)
Tone 3		_3	ba3 (把)
Tone 4		_4	ba4 (罢)

Table 10. Spontaneous Phenomenon Labels^⑦

Phenomena	Labels	
	Start Position	End Position
拖音 lengthening	leng<	leng>
喘息 breathing	breath<	breath>
笑声 laughing	laugh<	laugh>
哭声 crying	cry<	cry>
咳嗽 coughing	cough<	cough>
间断 disfluency	disfl<	disfl>
噪音 noise	noise<	noise>
沉默 silence (long)	silen<	silen>
含混音 murmur/uncertain	mum<	mum>
语气词 modal/exclamation	mod<	mod>
啞嘴音 smack	smack<	smack>
其他语言 non-Chinese	nocn	
不确定音段 Uncertain segment	/?	

[®] Normal silence in the IPA sequence, different from that in Table 10 which is a LONG silence.

^⑦ Will be transcribed in a different level from the IPA level.

Appendix: Changing Rule of Pinyin

Table of Finals

	a	o	e	ai	ei	ao	ou	an	en	ang	eng	ong
i	ia		ie			iao	iou	ian	in	iang	ing	iong
u	ua	uo		uai	uei			uan	uen	uang	ueng	
ü[®]			üe					üan	ün			

Changing rules when an *initial* and a *final* is combined into *Pinyin* string:

- (1) **For Row /i/**, if the *initial* is an *zero-initial*, the pinyin is written as /yi/, /ya/, /ye/, /yao/, /you/, /yan/, /yin/, /yang/, /ying/, and /yong/; otherwise, simply combine the *initial* and the *final* together.
- (2) **For Row /u/**, if the *initial* is an *zero-initial*, the pinyin is written as /wu/, /wa/, /wo/, /wai/, /wei/, /wan/, /wen/, /wang/, and /weng/; otherwise, simply combine the *initial* and the *final* together.
- (3) **For Row /ü/**, if the *initial* is an *zero-initial*, the pinyin is written as /yu/, /yue/, /yuan/, and /yun/, where the two dots on 'ü' are removed; if the *initial* is /j/, /q/, or /x/, combine them together and remove dots on 'ü'; if the *initial* is /l/ or /n/, simply combine the *initial* and the *final* together; no other *initials* can be combined with *finals* in Row /ü/.
- (4) When /iou/, /uei/ or /uen/ follows a *non-zero-initial*, they are written as /iu/, /ui/, /un/.
- (5) Not all *initial* and *final* combination is a valid pinyin.

[®] In our programming, 'ü' is denoted by 'v'.