

plosive bilabial fortis

/p/

phoneme

Sauer 2

allophones

Sauer 2 1

aspirated [p^h]at Initial in stressed syllable: <pie> /paɪ/ [p^haɪ̯] Sauer 2 1 1only lightly aspirated¹ or unaspirated² [p]¹at Final in stressed before unstressed syllable: <rapper> /ˈræp.ə/ [ˈɹæp.ə] Sauer 2 1 1²preceded by /s/ at Initial in stressed syllable: <spy> /spaɪ/ [spaɪ̯] Sauer 2 1 1

unreleased airflow [p̚]

at Final in syllable before word boundary: <rap> /ræp/ [ɹæp̚] Sauer 2 1 3

at Final in syllable before obstruent: <napkin> /ˈnæp.kɪn/ [ˈnæp̚.kɪn] Sauer 2 1 3

nasal release [pⁿ]at Final in syllable before homorganic nasal: <shipment> /ˈʃɪp.mənt/ [ˈʃɪpⁿ.mənt̚] Sauer 2 1 3even across word boundary: <sheep meat> /ˈʃi:p ˈmi:t/ [ˈʃi:pⁿ ˈmi:t̚] Sauer 2 1 3

plosive alveolar fortis

/t/

phoneme

Sauer 2

allophones

Sauer 2 1

aspirated [t^h]at Initial in stressed syllable: <tie> /taɪ/ [t^haɪ]

Sauer 2 1 1

only lightly aspirated¹ or unaspirated² [t]¹at Final in stressed before unstressed syllable: <latter> /'læt.ə/ ['læt.ə]

Sauer 2 1 1

²preceded by /s/ at Initial in stressed syllable: <stay> /steɪ/ [steɪ]

Sauer 2 1 1

unreleased airflow [t̚]

at Final in syllable before word boundary: <rat> /ræt/ [ræt̚]

Sauer 2 1 3

at Final in syllable before obstruent: <letdown> /'let.daʊn/ ['lɛt̚.daʊn]

Sauer 2 1 3

nasal release [tⁿ]at Final in syllable before homorganic nasal: <catnip> /'kæt.nɪp/ ['k^hætⁿ.nɪp]

Sauer 2 1 3

lateral release [t^l]

at Final in syllable before lateral: <settle at last> /'set.əl ət 'lɑːst/ ['sɛt̚.l̩ ət̚ lɑːst̚]

Sauer 2 1 3

retracted [t̠]

before /r/: <night rate> /'naɪt 'reɪt/ ['naɪt̠ 'reɪt̠]

dental [t̪]

before /θ, ð/: <eighth, at this> /eɪtθ, æt 'ðɪs/ [eɪt̪θ, æt̪ 'ðɪs]

Sauer 2 1 4

plosive velar fortis

/k/

phoneme

Sauer 2 1

allophones

Sauer 2 1

aspirated [k^h]at Initial in stressed syllable: <car> /kɑ:/ [k^hɑ:] Sauer 2 1 1only lightly aspirated¹ or unaspirated² [k]¹at Final in stressed before unstressed syllable: <hacker> /'hæk.ə/ ['hæk.ə] Sauer 2 1 1²preceded by /s/ at Initial in stressed syllable: <scar> /ska:/ [ska:] Sauer 2 1 1

unreleased airflow [k̚]

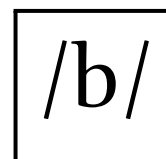
at Final in syllable before word boundary: <rack> /ræk/ [ræk̚] Sauer 2 1 3

at Final in syllable before obstruent: <TikTok> /'tɪk.tɒk/ ['tʰɪk̚.tɒk̚] Sauer 2 1 3

advanced or fronted [k̟]

before a front vowel: <key> /ki:/ [k̟hi:]

plosive bilabial lenis



phoneme

Sauer 2

allophones

Sauer 2 1

fully voiced [b]

between two resonants: <lobby> /'lɒb.i/ ['lɒb.i:] Sauer 2 1 2

partially¹ or fully² devoiced [b̥]¹at Initial in syllable after word boundary: <buy> /baɪ/ [baɪ̥] Sauer 2 1 2²at Final in syllable before word boundary: <cab> /kæb/ [kʰæb̥] Sauer 2 1 2

unreleased airflow [b̚]

at Final in syllable before word boundary: <cab> /kæb/ [kʰæb̚] Sauer 2 1 3

at Final in syllable before obstruent: <object> /'ɒb.dʒekt/ ['ɒb̚.dʒekt̚] Sauer 2 1 3

nasal release [bⁿ]before homorganic nasal: <submarine> /'sʌb.mə.ri:n/ ['sɛbⁿ.mə.ɹi:n] Sauer 2 1 3

plosive alveolar lenis

/d/

phoneme

Sauer 2

allophones

Sauer 2 1

fully voiced [d]

between two resonants: <candy> /'kænd.i/ ['kʰænd.i:]

Sauer 2 1 2

partially¹ or fully² devoiced [d̥]¹at Initial in syllable after word boundary: <day> /deɪ/ [d̥eɪ]

Sauer 2 1 2

²at Final in syllable before word boundary: <lid> /lɪd/ [lɪd̥]

Sauer 2 1 2

unreleased airflow [d̚]

at Final in syllable before word boundary: <lid> /lɪd/ [lɪd̚]

Sauer 2 1 3

at Final in syllable before obstruent: <a dead dog> /ə 'ded 'dɒg/ [ə 'd̚ɛd̚ 'dɒg]

Sauer 2 1 3

nasal release [dⁿ]at Final in syllable before nasal: <Edna> /*'ed.nə/ [*'ɛdⁿ.nə]

Sauer 2 1 3

lateral release [d^l]at Final in syllable before lateral: <midline, middle> /'mɪd.laɪn, 'mɪd.əl/
['mɪd^l.laɪn, 'mɪd^l.əl]

Sauer 2 1 3

retracted [d̠]

before /r/: <dream> /dri:m/ [d̠ri:m]

dental [d̪]

before /θ, ð/: <width> <add this> /wɪdθ/ /'æd 'ðɪs/ [wɪd̪θ] ['æd̪ 'ðɪs]

Sauer 2 1 4

plosive velar lenis

/g/

phoneme

Sauer 2

allophones

Sauer 2 1

fully voiced [g]

between two resonants: <logging> /'lɒg.ɪŋ/ ['lɒg.ɪŋ]

Sauer 2 1 2

partially¹ or fully² devoiced [g̊]

¹at Initial in syllable after word boundary: <game> /geɪm/ [ge̊ɪm]

Sauer 2 1 2

²at Final in syllable before word boundary: <mug> /mʌg/ [mɛ̊g̊]

Sauer 2 1 2

unreleased airflow [g̚]

at Final in syllable before word boundary: <log> /lɒg/ [lɒ̚g̚]

Sauer 2 1 3

at Final in syllable before obstruent?: <magpie> /'mæɡ.paɪ/ ['mæ̚g̚.paɪ]

Sauer 2 1 3

advanced or fronted [g̟]

before a front vowel: <ghee, geese> /gi:, gi:s/ [g̟i:, g̟i:s]

affricate palato-alveolar fortis

/tʃ/

phoneme

Sauer 10

allophones

Sauer 10 1

[tʃ̥]

initially: <charm> /tʃɑ:m/ [tʃ̥ɑ:m] Sauer 10 1

medially: <teacher> /'ti:tʃ.ə/ ['tʰi:tʃ̥.ə] Sauer 10 1

finally: <reach> /ri:tʃ/ [ɹi:tʃ̥] Sauer 10 1

affricate palato-alveolar lenis

/dʒ/

phoneme

Sauer 10

allophones

Sauer 10 2

fully voiced [dʒ̥]

between two resonants: <raging> /'reɪdʒ.ɪŋ/ [ˈɹeɪ̯dʒ̥.ɪŋ]

Sauer 10 2

partially¹ or fully² devoiced [dʒ̥̥]¹at Initial in syllable after word boundary: <Jake> /dʒeɪk/ [dʒ̥̥eɪk̚]

Sauer 10 2

²at Final in syllable before word boundary: <rage> /reɪdʒ/ [ɹeɪ̯dʒ̥̥]

Sauer 10 2

fricative labio-dental fortis

/f/

phoneme

Sauer 5

allophones

Sauer 5 1

[f]

initially: <Philip> /*'fɪl.ɪp/ [/*'fɪl.ɪp]

Sauer 5 1

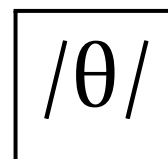
medially: <hi-fi> /'haɪ.faɪ/ ['haɪ.fɑɪ]

Sauer 5 1

finally: <reef> /ri:f/ [ɹiːf]

Sauer 5 1

fricative dental fortis



phoneme

Sauer 2

allophones

Sauer 4 1 2

[θ]

initially: <thick> /θɪk/ [θɪk̚]

Sauer 4 1 2

medially: <method> /'meθ.əd/ ['mɛθ.əd̚]

Sauer 4 1 2

finally: <earth> /ɜːθ/ [ɜːθ̚]

Sauer 4 1 2

fricative alveolar fortis

/s/

phoneme

Sauer 4

allophones

Sauer 4 1 1

[s]

initially: < **sick** > /sɪk/ [sɪk̚]

Sauer 4 1 1

medially: < **facing** > /'feɪs.ɪŋ/ ['fɛɪs.ɪŋ]

Sauer 4 1 1

finally: < **yes** > /jes/ [jɛs̚]

Sauer 4 1 1

fricative palato-alveolar fortis



phoneme

Sauer 9

allophones

Sauer 9 1

[ʃ]

initially: <shoe> /ʃu:/ [ʃu:]

Sauer 9 1

medially: <fissure> /'fɪf.ə/ ['fɪf.ə]

Sauer 9 1

finally: <dish> /dɪʃ/ [dɪʃ]

Sauer 9 1

fricative glottal (fortis)

/h/

phoneme

Sauer II

allophones

Sauer II 1

[h]

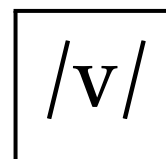
initially: <hurt> /hɜ:t/ [hɜ:t̚]

Sauer II 1

medially: <mojito> /məʊ.'hi:t.əʊ/ [məʊ̚.'hi:t.əʊ̚]

Sauer II 1

fricative labio-dental lenis



phoneme

Sauer 5

allophones

Sauer 5 2

fully voiced [v]

between two resonants: <loving> /'lʌv.ɪŋ/ ['lev.ɪŋ]

Sauer 5 2

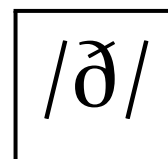
partially¹ or fully² devoiced [v̥]¹at Initial in syllable after word boundary: <very> /'ver.i/ ['v̥ɪ.i:]

Sauer 5 2

²at Final in syllable before word boundary: <love> /lʌv/ [l̥v]

Sauer 5 2

fricative dental lenis



phoneme

Sauer 4

allophones

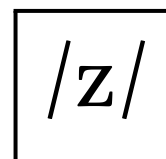
Sauer 4 2 2

fully voiced [ð]

between two resonants: <other> /'ʌð.ə/ [ˈeð.ə] Sauer 4 2 2

partially¹ or fully² devoiced [ð̥]¹at Initial in syllable after word boundary: <their> /ð̥eə/ [ð̥e̞ə] Sauer 4 2 2²at Final in syllable before word boundary: <breathe> /bri:ð̥/ [b̥ri:ð̥] Sauer 4 2 2

fricative alveolar lenis



phoneme

Sauer 4

allophones

Sauer 4 2 1

fully voiced [z]

between two resonants: <busy> /'bɪz.i/ ['bɪz.i:] Sauer 4 2 1

partially¹ or fully² devoiced [z̥]¹at Initial in syllable after word boundary: <zero> /'ziəɹ.əʊ/ ['ziəɹ.əʊ] Sauer 4 2 1²at Final in syllable before word boundary: <lose> /lu:z/ [lu:z̥] Sauer 4 2 1

fricative palato-alveolar lenis



phoneme

Sauer 9

allophones

Sauer 9 2

fully voiced [ʒ]

between two resonants: <leisure> /'leʒ.ə/ [ˈlɛʒ.ə] Sauer 9 2

partially¹ or fully² devoiced [ʒ̥]

¹at Initial in syllable after word boundary: <genre> /'ʒɒn.rə/ [ˈʒɒn.ɹə] Sauer 9 2

²at Final in syllable before word boundary: <rouge> /ru:ʒ/ [ɹu:ʒ̥] Sauer 9 2

nasal bilabial (lenis)

/m/

phoneme

Sauer 12

allophones

Sauer 12 1

[m]

initially: <mass> /mæs/ [mæs]

Sauer 12 1

medially: <Nemo> /*'ni:m.əʊ/ [*'ni:m.əʊ̯]

Sauer 12 1

finally: <autumn> /'ɔ:t.əm/ ['ɔ̥t.əm]

Sauer 12 1

devoiced [m̥]

²at Initial following /s/: <smog> /smɒg/ [sm̥ɒ̯g̊]

nasal alveolar (lenis)

/n/

phoneme

Sauer 12

allophones

Sauer 12 1

[n]

initially: <nor> /nɔ:/ [nɔ:]

Sauer 12 1

medially: <annoyed> /ə'nɔɪd/ [ə'nɔɪd]

Sauer 12 1

finally: <done> /dʌn/ [dɛn]

Sauer 12 1

devoiced [n̥]

at Initial following /s/: <snug> /snɛg/ [sn̥ɛg̊]

dentalised [n̪]

at Final preceding /θ, ð/: <tenth, enthral> /tenθ, ɪn.'θrɔ:l/ [t̪hɛnθ, ɪn̪.'θrɔ:l]

retracted [n̠]

at Final preceding /r/: <enrage> /ɪn.'reɪdʒ/ [ɪn̠.'ɪɛɪ̠dʒ̠]

syllabic [n̩]

at Final in unstressed syllable following /ə/: <button> /'bʌt.ən, 'bʌt.n̩/ ['bet̪n̩]

φωv

0.0

20

nasal velar (lenis)

/ŋ/

phoneme

Sauer 12

allophones

Sauer 12 1

[ŋ]

medially: <singi**ng**> /'sɪŋ.ɪŋ/ ['sɪŋ.ɪŋ]

Sauer 12 1

finally: <si**ng**>/sɪŋ/ [sɪŋ]

Sauer 12 1

lateral alveolar (lenis)

/l/

phoneme

Sauer 8

allophones

Sauer 8 1

light (non-velarised) resonance [l]

before vowel (V): <lick, killing, kill it> /lɪk, 'kɪl.ɪŋ, kɪl ɪt/ [lɪk̚, 'kʰɪl.ɪŋ, 'kʰɪl ɪt]

Sauer 8 1 1

before /j/: <lieu, million, will you> /ljʊ:, 'mɪl.jən, wɪl ju/[ljʊ:, 'mɪl.jən, 'wɪl jʊ:]

Sauer 8 1 1

dark (velarised) resonance [ɫ]

before C other than /j/: <killed, kill them> /kɪld, kɪl ðəm/[kʰɪɫd, 'kʰɪɫ ðəm]

Sauer 8 1 2

before pause: <kill>/kɪl/[kɪɫ]

Sauer 8 1 2

when syllabic: <bottle>/'bɒt.l/['bɒt.ɫ]

Sauer 8 1 2

voiced [l, ɫ]

all the above examples are voiced

Sauer 8 1 3

devoiced [l̥]

at Initial in /pl, kl/ (not /spl, skl/): <play, clay>/pleɪ, kleɪ/[p̥leɪ, k̥leɪ]

Sauer 8 1 3

dental [ɫ̪]

before /θ, ð/: <health, tell them>/helθ, tel ðəm/[hɛɫ̪θ, 'tʰɛɫ̪ ðəm]

retracted [ɫ̠]

before /r/: <alright>/ɔ:l.'raɪt/[ɔ̠:ɫ̠.'raɪt̠]

approximant bilabial

/w/

phoneme

Sauer 6

allophones

Sauer 6 1

voiced [w]

medially: <reward> /ri.'wɔ:d/ [ri.'wɔ:d̥]

Sauer 6 1 1

initially (mostly): <wolf, Gwyneth> /wɒlf, *'gwɪn.eθ/ [wɒlf, *'gwɪn.eθ]

Sauer 6 1 1

devoiced [w̥]

initially in /tw, kw/: <twist, quest> /twɪst, kwɛst/ [twɪst̥, kwɛst̥]

Sauer 6 1 2

(but not /skw/): <squirm, squeal> /skwɜ:m, skwi:l/ [skwɜ:m, skwi:l̥]

Sauer 6 1 2

approximant post-alveolar

/r/

phoneme

Sauer 3

allophones

Sauer 3 1

voiced [ɹ]

medially: <hearing> /'hɪəɹɪŋ/ ['hɪəɹɪŋ]

Sauer 3 1 1

initially: <rock> /rɒk/ [ɹɒkʔ]

Sauer 3 1 1

devoiced [ɹ̥]

initially, in /pr, tr, kr/: <pry, try, cry> /praɪ, traɪ, kraɪ/ [pɹ̥aɪ, tɹ̥aɪ, kɹ̥aɪ]

Sauer 3 1 2

but not /spr, str, skr/: <spray, stray, screw> /spreɪ, streɪ, skreɪ/ [spr̥eɪ, str̥eɪ, skr̥eɪ]

Sauer 3 1 2

flap [ɾ]

(optionally) after /θ, ð/: <throw, with regret> /θrəʊ, wɪð rɪ'ɡret/ [θɾəʊ, wɪð rɪ'ɡɾetʔ]

Sauer 3 2

(optionally) between vowels <very> /'veri/ ['vɾɪ]

Sauer 3 2

retroflex [ɻ, ɻ̥]

(optionally) after /t, d/, forming affricates: <try, dry> /traɪ, draɪ/ [tɻaɪ, dɻaɪ]

approximant palatal

/j/

phoneme

Sauer 7

allophones

Sauer 7 1

voiced [j]

medially: <beyond> /bi.'jɒnd/ [bi.'jɒnd̥]

Sauer 7 1 1

initially (but see below): <yes> /jes/ [j̥es]

Sauer 7 1 1

devoiced [j̥]

initially in /pj, tj, kj/: <pure, tune, cute> /pjʊə, tju:n, kju:t/ [p̥jʊə, t̥j̥u:n, k̥j̥u:t̥]

Sauer 7 1 2

(not /spj, stj, skj/): <spew, stew, askew> /spju:, stju:, skju:/ [sp̥j̥u:, st̥j̥u:, sk̥j̥u:]

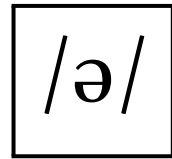
Sauer 7 1 2

φων

0.0

25

central mid unrounded



phoneme

Sauer 2

allophones

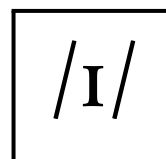
Sauer 2 1

φωv

0.0

26

near-front near-close unrounded



phoneme

Sauer 2

allophones

Sauer 2 1

φωv

0.0

27

front mid unrounded

/e/

phoneme

Sauer 2

allophones

Sauer 2 1

φωv

0.0

28

front near-open unrounded

/æ/

phoneme

Sauer 2

allophones

Sauer 2 1

central near-open unrounded



phoneme

Sauer 2

allophones

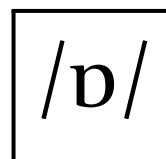
Sauer 2 1

φωv

0.0

30

near-back open rounded



phoneme

Sauer 2

allophones

Sauer 2 1

φωv

0.0

31

near-back near-close rounded



phoneme

Sauer 2

allophones

Sauer 2 1