

Here's a chart of the 20 standard amino acids, including their one-letter code, three-letter code, side chain type, and approximate pKa values for relevant groups:

Amino Acid	3-Letter Code	1-Letter Code	Side Chain Type	pKa (Side Chain)	pKa (α -COOH)	pKa (α -NH ₃)
Glycine	Gly	G	Nonpolar	—	2.34	9.60
Alanine	Ala	A	Nonpolar	—	2.34	9.69
Valine	Val	V	Nonpolar	—	2.32	9.62
Leucine	Leu	L	Nonpolar	—	2.36	9.60
Isoleucine	Ile	I	Nonpolar	—	2.36	9.68
Methionine	Met	M	Nonpolar	—	2.28	9.21
Phenylalanine	Phe	F	Aromatic	—	1.83	9.13
Tryptophan	Trp	W	Aromatic	—	2.83	9.39
Proline	Pro	P	Nonpolar	—	1.99	10.96
Serine	Ser	S	Polar, uncharged	—	2.21	9.15
Threonine	Thr	T	Polar, uncharged	—	2.63	10.43
Cysteine	Cys	C	Polar, uncharged	8.18	1.96	10.28
Tyrosine	Tyr	Y	Aromatic	10.07	2.20	9.11
Asparagine	Asn	N	Polar, uncharged	—	2.02	8.80
Glutamine	Gln	Q	Polar, uncharged	—	2.17	9.13
Aspartic acid	Asp	D	Negatively charged	3.65	1.88	9.60

Glutamic acid	Glu	E	Negatively charged	4.25	2.19	9.67
Lysine	Lys	K	Positively charged	10.53	2.18	8.95
Arginine	Arg	R	Positively charged	12.48	2.17	9.04
Histidine	His	H	Positively charged	6.00	1.82	9.17

Notes:

1. **pKa (Side Chain):** Only provided for amino acids with ionizable side chains.
2. **pKa (α -COOH):** Refers to the carboxylic acid group in the backbone.
3. **pKa (α -NH₃):** Refers to the amine group in the backbone.
4. Values can vary slightly based on the source and the experimental conditions, such as pH and temperature.