

Common unknowns for the K_a lab

NOTE: Your instructor will notify you if list contains all possible unknowns for your lab section.

Acid	Formula	Molar Mass (g/mol)	pK_{a1}	pK_{a2}	pK_{a3}
Adipic	$C_6H_{10}O_4$	146.14	4.41	5.28	--
Alanine	$C_3H_8O_2N$	89.09	4.34	--	--
Ascorbic	$C_6H_8O_6$	176.12	4.17	11.57	
Benzoic	$C_7H_6O_2$	122.12	4.19	--	--
Butanoic	$C_4H_8O_2$	88.11	4.82	--	--
Citric	$C_6H_8O_7$	192.12	3.13	4.76	6.40
Glutaric	$C_5H_8O_4$	132.11	4.34	5.22	
KHP	$C_8H_5O_4K$	204.23	5.41	--	--
Leucine	$C_6H_{14}O_2N$	131.17	2.33	9.74	--
Maleic	$C_4H_4O_2$	116.07	1.83	6.07	--
Malic	$C_4H_6O_5$	134.09	3.40	5.11	--
Malonic	$C_3H_4O_4$	104.06	2.84	5.70	--
Mandelic	$C_8H_8O_3$	152.15	3.86	--	--
4-Nitrophenol	$C_6H_5O_3N$	139.11	7.15	--	--
Oxalic	$C_2H_2O_4$	90.04	1.27	4.28	--
Phthalic	$C_8H_6O_4$	166.13	2.95	5.41	--
Succinic	$C_4H_6O_4$	118.09	4.21	5.64	--
Tartaric	$C_4H_6O_6$	150.09	2.96	4.24	--
Valeric	$C_5H_{10}O_2$	102.13	4.84	--	--

Remember, for polyprotic acids whose neighboring K_a 's differ by less than 10^4 , it may be difficult to see the two protons titrated at different endpoints. In this case, the two protons will appear as a single endpoint or transition in the titration curve. If you believe this to be true, assume the pK_a value you determine from your titration curve to be the average of the pK_a 's. Also remember that the equivalent weight for a Brønsted acid is the mass that can produce 1 mole of H^+ in a chemical reaction (or consume 1 mole of OH^-).