

Appendix A: The K_a values of commonly used anionic flotagents (Tables A1.1–A1.5)

Table A1.1

Xanthates

Alkyl xanthate	K_a	Alkyl xanthate	K_a
Methyl	3.4×10^{-2}	Ethyl	3.0×10^{-2}
Ethyl	2.9×10^{-2}	Amyl	1.0×10^{-2}
Propyl	2.5×10^{-2}	Ethyl	1.0×10^{-2}
Butyl	2.3×10^{-2}	Propyl	1.0×10^{-2}
Amyl	1.9×10^{-2}	Butyl	7.9×10^{-2}
Isopropyl	2.0×10^{-2}	Amyl	1.0×10^{-2}
Ethyl	5.2×10^{-2}		
Amyl	2.5×10^{-2}		

Table A1.2

Other reagents with –SH group

Reagents	K_a	Reagents	K_a
Ethyl dithiophosphate	2.3×10^{-5}	Mercapto benzothiazole	5.0×10^{-7}
	2.4×10^{-2}	Mercapto acetic acid	1.98×10^{-4}
Propyl dithiophosphate	1.78×10^{-2}	Octyl thiol	$10^{-11.8}$
SN-9	1.6×10^{-7}	SN-9*	$10^{-5.6}$
Z-200	3.02×10^{-12}	Hexyl thiol	$10^{-6.5}$

Table A1.3

Fatty acid

Fatty acid	K_a	Fatty acid	K_a
HCOOH	2.1×10^{-5}	C ₅ H ₁₁ COOH	1.30×10^{-5}
CH ₃ COOH	1.83×10^{-5}	C ₅ H ₁₁ COOH	1.41×10^{-5}
C ₂ H ₅ COOH	1.32×10^{-5}	C ₅ H ₁₁ COOH	1.1×10^{-5}
C ₃ H ₇ COOH	1.50×10^{-5}	C ₅ H ₁₁ COOH	5.1×10^{-6}
C ₄ H ₉ COOH	1.56×10^{-5}	Oleic acid	1.0×10^{-6}
C ₅ H ₁₁ COOH	1.4×10^{-5}		$10^{-4.95}$

Table A1.4
Fatty amine

Fatty amine	K_b	Fatty amine	K_b
C ₉ H ₁₉ NH ₂	4.4×10^{-4}	C ₁₅ H ₃₁ NH ₂	4.1×10^{-4}
C ₁₀ H ₂₁ NH ₂	4.4×10^{-4}	C ₁₆ H ₃₃ NH ₂	4.0×10^{-4}
C ₁₁ H ₂₃ NH ₂	4.4×10^{-4}	C ₁₈ H ₃₇ NH ₂	4.0×10^{-3}
C ₁₂ H ₂₅ NH ₂	4.3×10^{-4}	C ₁₆ H ₃₃ -pyridine bromide	3.0×10^{-3}
C ₁₃ H ₂₇ NH ₂	4.3×10^{-4}	<i>N</i> -methyl-dodecyl amine	1.0×10^{-3}
C ₁₄ H ₂₉ NH ₂	4.2×10^{-4}	Dimethyl-dodecyl amine	5.5×10^{-5}

Table A1.5
Other flotation reagents

Reagents	K_b	Reagents	K_b
HCN	$10^{-9.21}$	CH ₃ CONHOH	$10^{-9.42}$
Hydroxyl phosphonic acid	$10^{-2.6}$ – $10^{-2.9}$	C ₅ H ₁₁ CONHOH	$10^{-9.64}$
Cupferron	$10^{-4.16}$	C ₆ H ₁₃ CONHOH	$10^{-9.67}$
		C ₇ H ₁₅ CONHOH	$10^{-9.44}$
		C ₈ H ₁₇ CONHOH	$10^{-10.98}$