

SC-Database

Software version = 5.81 Data version = 4.62

Experiment list contains 313 experiments for
(no ligands specified)

Metal : Bi+++

(no references specified)

(no experimental details specified)

e- HL Electron (442)
Electron;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq 130°C 100% U T 1967BBc (366) 1
K=8.68

Medium: Na0.37Al0.63Cl2.26 eutectic. K: 6Bi+ = Bi+++ + Bi5+ . K=5.60(190 C)
At 380 C, different eutectic: K=-1.51, K(6Bi+ =Bi + 3Bi5+)=10.23

Bi+++ ISE non-aq 264°C 100% U 1963BSa (367) 2
K(4Bi+ = Bi4+)=6.43

Medium: liquid BiCl3. By spectrophotometry, K=6.58

Bi+++ oth none 25°C 0.0 U 1952LAB (368) 3
K=-23.2(-460 V)

K: 0.5Bi2O3(s)+1.5H2O+3e=Bi(s)+3OH. From thermodynamic data

Bi+++ EMF oth/un rt 1.0M U 1934BLa (369) 4
K=21.5(620 mV)

Medium: NaOH;K: 4BiO2(s)+H2O+2e=Bi4O7(s)+2OH. K(Bi4O7(s)+H2O+2e=2Bi2O3(s)+
2OH)=18(510 mV). K(0.5Bi2O3(s)+1.5H2O+3e=Bi(s)+3OH)=-21(410 mV)

Bi+++ EMF none 25°C 0.0 U T 1918NCa (370) 5
K=8.11(159.9 mV)

K: BiOCl(s)+2H+3e=Bi(s)+H2O+Cl. K=8.58(15 C;163.5 mV),7.67(35 C;156.3 mV)

AsO4--- H3L Arsenate CAS 7778-39-4 (1557)
Arsenate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sol oth/un 20°C var U 1956CHc (1132) 6
Kso(BiL)=-9.36

Br- HL Bromide CAS 10035-10-6 (19)
Bromide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF NaClO4 25°C 5.0M C TIH 1991SVa (1739) 7

B6=10.31

K6=0.7

Method: Hg/Bi amalgam electrode

Bi+++ ISE alc/w 25°C 100% U K1=6.23 B2=10.70 1984GSc (1740) 8
B3=14.63
B4=16.15

Bi+++ EMF non-aq 25°C 100% U K1=5.6 B2=11.0 1983SGa (1741) 9
B3=16.1
B4=19.2
B5=20.2
B6=22.8

Medium: DMF, 1.0 M NaClO4

Bi+++ EMF NaClO4 25°C 0.50M U I M K1=2.37 B2=4.18 1976FKa (1742) 10
B3=5.86
B4=7.28
B5=8.24
B6=8.34

B(BiClBr3)=7.18, B(BiCl4Br)=7.60, B(BiCl3Br2)=8.23, B(BiCl2Br3)=7.64 and
B(BiClBr4)=9.04.

Bi+++ gl NaClO4 25°C 3.00M U I M K1=2.54 B2=5.05 1976FKb (1743) 11
B3=6.75
B4=8.10
B5=8.98
B6=9.75

B(BiBr(NO3))=3.40, B(BiBr2(NO3))=5.60, B(BiBr2(NO3)2)=6.12, B(BiBr3(NO3))=
7.57, B(BiBr4(NO3))=8.97. Data also for I=1,2 and 3 and Cd/Zn complexes

Bi+++ EMF oth/un 25°C 0.50M U I K1=2.37 B2=4.18 1971FKb (1744) 12
B3=5.86
B4=7.28
B5=8.23
B6=8.34

Medium: LiClO4. Also K1=2.22, B2=4.39, B3=6.17, B4=7.23, B5=8.67, B6=8.75 (I=1)
Also data for 10,35,45,55,65 C and I to 4 M

Bi+++ EMF none 25°C 0.0 U T K1=3.06 B2=5.58 1971FKb (1745) 13
B3=7.42
B4=8.63
B5=9.23
B6=8.67

K1=3.08, B2=5.50, B3=7.50, B4=8.84, B5=9.18, B6=9.14 (10 C); K1=3.16, B2=5.65,
B3=7.44, B4=8.70, B5=9.02, B6=8.62 (35 C) also to 55 C

Bi+++ sol NaClO4 25°C 0.50M U I 1971FKc (1746) 14
*Kso=6.26

Medium: LiClO4. *Kso: BiOL(s)+H=Bi+L+H2O. Kso=6.47 (I=1), 6.66 (I=2),

6.97(I=3), 7.45(I=4), 7.45(I=0 corr)

 Bi+++ ix NaClO4 25°C 1.89M U K1=2.36 B2=4.42 1967LDb (1747) 15
 B3=6.26
 B4=7.7

Bi+++ cal NaClO4 30°C 4.0M U T H 1967VLe (1748) 16
 Medium: HClO4. DH(K1)=-2.34 kJ mol⁻¹(10 C), -1.50(18 C), -0.08(25 C),
 0.42(30 C), 1.05(35 C), 3.14(50 C). DH values at 35 C also at various I values

Bi+++ sp oth/un 25°C 4.0M U K1=3.18 B2=4.96 1966PHa (1749) 17
 B4=8.79
 B6=10.96
 B8=9.98
 Ks((Me4N)3(BiL4)2L)=-14.11
 Medium: H2SO4

Bi+++ sol NaClO4 25°C 3.0M U B2=4.29 1965JLb (1750) 18
 B3=6.19
 Ks(BiOL(s)+2H=Bi+L+H2O)=-6.24

Bi+++ EMF non-aq 226°C 100% U T 1962TOc (1751) 19
 K=2830/T-1.26
 Metal:Bi+. Medium: BiBr3(l). t:226-325C. K: 4BiBr=Bi4Br4, x units.
 Alternative explanation: formation of Bi3Br3.

Bi+++ sol NaClO4 20°C 3.0M U K1=2.26 B2=4.26 1957AGa (1752) 20
 K3=1.92
 K4=1.62
 K(BiOBr(s)+2H=BiBr+H2O)=-6.52
 Medium: 2M NaClO4, 1M H+. By Bi/Hg electrode B2=4.45, K3=1.85, K4=1.40,
 K5=1.58, K6=0.10

Bi+++ EMF KNO3 20°C 2.30M U 1953BGa (1753) 21
 B6=9.70 (in 0.6M H+)
 B4=7.82 (in 1.2M H+)
 Method: Ag and Bi electrodes.

Bi+++ sol oth/un 25°C var U I K2=1.25 1953YAb (1754) 22
 K(BiOBr(s)+2H=BiBr+H2O)=-2.43
 K3=0.32
 In 1 M HNO3 K(BiOL(s)+2H+L=BiL2+H2O)=-1.18, K(BiOL(s)+2H+2L=BiL3+H2O)=-0.86

Bi+++ EMF oth/un rt 2.50M U K1=4.30 B2=6.52 1939BAb (1755) 23
 Method: Bi electrode. Medium: HNO3.

 CS3-- H2L CAS 549-08-1 (936)
 Trithiocarbonate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

 Bi+++ sol oth/un 25°C 0.0 U K1=2.1 1968VGb (3465) 24
 B(BiClL)=5.5
 B(BiClL2)=7.6
 B(BiClL3)=7.8

Medium: 0 corr. from 1 and 2 M HClO4

Cl- HL Chloride CAS 7647-01-0 (50)
 Chloride;

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ ix oth/un 25°C 1.0M C K1=2.36 B2= 3.61 1990S0a (4526) 25
 B3=4.95

Medium: 1.0 M HCl/HClO4. Method: tracer concentration of 210Bi.

 Bi+++ ISE alc/w 25°C 100% U K1=6.15 B2=10.0 1984GSc (4527) 26
 B3=12.9
 B4=14.2

 Bi+++ EMF non-aq 25°C 100% U K1=6.6 B2=12.6 1983SGa (4528) 27
 B3=18.7
 B4=20.9

Medium: DMF, 1.0 M NaClO4

 Bi+++ EMF NaClO4 25°C 0.50M U I M K1=2.82 B2=4.44 1976FKa (4529) 28
 B3=5.45
 B4=6.23
 B5=6.11
 B6=6.68

B(BiClBr)=4.80, B(BiCl2Br)=6.18, B(BiClBr2)=6.45, B(BiCl3Br)=7.36 and
 B(BiCl2Br2)=8.00.

 Bi+++ vlt NaClO4 20°C 4.70M U 1975KBb (4530) 29
 B5=6.92

 Bi+++ ISE NaClO4 25°C 0.50M U I K1=2.82 B2=4.44 1974FKb (4531) 30
 B3=5.45
 B4=6.23
 B5=6.11
 B6=6.68

Medium: LiClO4; K1=2.71, B2=4.04, B3=5.18, B4=6.41, B5=5.95(I=1); K1=2.53, B2=4.66,
 B3=6.32, B4=7.93, B5=8.18, B6=6.00(I=3). I=0: K1=3.7, B2=5.5, B3=6.9, B4=7.9, B5=7.0

 Bi+++ ISE NaClO4 25°C 0.50M U I M 1974FKb (4532) 31
 B(Bi(NO3)L)=3.40
 B(Bi(NO3)L2)=4.60
 B(Bi(NO3)2L)=3.19
 B(Bi(NO3)L3)=6.30

Medium: LiClO4; Bi amalgan electrode. Data on many related complexes at I=0

to I-4

Bi+++ sol NaClO4 25°C 2.0M U I K1=2.12 B2=3.85 1973BMe (4533) 32
B3=5.32
B4=6.22

Medium: HClO4. K1=2.09, B2=4.04, B3=5.56, B4=6.88, B5=7.60(I=3); K1=2.13, B2=4.17, B3=6.01, B4=7.30, B5=8.29(I=4)

Bi+++ vlt NaClO4 30°C 2.0M U K1=2.2 B2=3.8 1970Bwb (4534) 33
B3=5.6
B4=6.9 to 7.2

Bi+++ sp NaClO4 25°C 5.0M U K1=2.35 B2=4.40 1970KAa (4535) 34
K3=1.05
K4=1.20
K5=0.64
K6=-0.23

Bi+++ oth oth/un 25°C var U K1=2.44 B2=3.10 1969CAa (4536) 35
K3=0.64
K4=0.03

Medium: HCl. Method: electrophoresis

Bi+++ sol NaClO4 25°C 4.0M U K1=3.0 B2=4.3 1969J0a (4537) 36
B3=6.7
B4=6.9
B5=8.6
B6=8.4

*Kso(BiOL(s)+2H=Bi+2H2O+L)=-7.39

Bi+++ sol NaClO4 50°C 3.0M U TI 1968VGc (4538) 37
*Kso(BiOL(s)+2H=Bi+L+H2O)=-6.6

*Kso=-6.81(15 C), -6.75(25 C); at I=2: *Kso=-6.63(15 C), -6.54(25 C), -6.52(50C)
At I=1: *Kso=-6.52(15 C), -6.47(25 C), 6.41(50 C)

Bi+++ ISE NaClO4 25°C 3.0M U H 1967AHa (4539) 38
Method: amalgam electrode. Medium: LiClO4. DH(K1)=0, DS=42 kJ mol⁻¹

Bi+++ vlt oth/un 25°C 1.0M U 1967CVa (4540) 39
B5=5.25

Medium: HNO3. In H2SO4: B5=5.35

Bi+++ sol NaClO4 25°C var U I 1967VGa (4541) 40
*Kso=-6.61

Medium: HClO4 var. At I=0 corr: *Kso=-7.87

Bi+++ sol oth/un 25°C var U 1967VGa (4542) 41
*Kso=-6.72
B(BiCl(NO3)2)=3.23

Medium: H+ var. At I=0 corr: *Kso=-7.95, B=5.04

Bi+++ cal NaClO4 17°C 4.0M U TIH 1967VLe (4543) 42
 Medium: HClO4. DH(K1)=-2.6 kJ mol⁻¹(-7 C), -1.1(0 C), -0.6(5 C), 0.5(10 C),
 1.4(18 C), 2.2(25 C), 4.3(40 C). Also at 25 C in HClO4 I=6 to 0

Bi+++ ix NaClO4 25°C 1.89M U K1=2.34 B2=3.89 1966LDa (4544) 43
 B3=5.23

Bi+++ sol NaClO4 25°C 4.0M U B2=4.30 1965JLb (4545) 44
 B3=5.91
 B4=6.76
 Ks(BiOL(s)+2H=Bi+L+H2O)=-7.08

Bi+++ ISE NaClO4 20°C 2.0M U 1964HSc (4546) 45
 K5.K6=0.28
 K3.K4=2.40
 In 1 M HClO4: B2=4.5 (see J.Inorg.Nucl.Chem., 1966, 28, 2037)

Bi+++ sol oth/un 25°C 4.0M U 1964HSc (4547) 46
 Ks((Me4N)3(BiCl4)Cl2)=-7.64
 K5.K6=0.8
 K3.K4=2.58
 Medium: H2SO4. By spectrophotometry: B6/B4=0.5, B4/B2=2.08

Bi+++ ISE oth/un 25°C 4.0M U H 1963MFe (4548) 47
 K(NH4+BiCl6)=0.11
 K=0.26(45 C), 0.38(65 C). DH(K)=22 kJ mol⁻¹, DS=79 J K⁻¹ mol⁻¹

Bi+++ ISE oth/un 25°C 4.0M U T HM 1963MKa (4549) 48
 K(Na+BiCl6)=-0.26
 K(2Na+BiCl6)=-0.7
 K(K+BiCl6)=0.18
 K(2K+BiCl6)=-1.0
 Method: BiHg electrode. Medium: 4(Li/H)Cl. Values for 25-65 C with Na, K, Rb
 and Cs complexes. Also DH and DS

Bi+++ ISE NaClO4 25°C 4.0M U T K1=2.2 B2=3.5 1963MKe (4550) 49
 K3=2.3
 K4=0.95
 K5=0.55
 K6=0.06
 Method: Bi/Hg electrode, 3 M LiClO4, 1 M HClO4. 45C: K1=2.2, K2=1.55, K3=2.35,
 K4=0.9, K5=0.3, K6=0.06. 65 C: 2.2, 1.7, 2.4, 0.85, 0.45, -0.24

Bi+++ vlt NaClO4 25°C 7.0M U I K1=1.91 B2=4.58 1959DPb (4551) 50
 K3=1.32
 K4=1.79
 K5=1.60
 K6=-1.59
 B5=9.29. Data at other NaClO4 concentrations

 Bi+++ ISE NaClO4 20°C 3.0M U B2=3.5 1957AGa (4552) 51
 K3=1.85
 K4=0.75
 K5=0.62
 K6=-0.16

Method: Bi/Hg electrode(Bi); B6=6.56. By sol. $K_s(\text{BiOL}+2\text{H}=\text{Bi}+\text{L}+\text{H}_2\text{O})=-6.68$,
 K1=2.36

 Bi+++ sp NaClO4 ? 5.0M U I 1957NHa (4553) 52
 K3=1.35
 K4=0.43
 K5=0.48

In 1 M HClO4 K1=2.43, K2=2 to 3?; K5=0.9, K6=-0.21. Plus other media

 Bi+++ sp oth/un ? 5.0M U K1=2.43 B2=4.43 1956NEa (4554) 53
 K3=1.35
 K4=0.43
 K5=0.48

 Bi+++ ISE oth/un 20°C 2.90M U I 1953BGa (4555) 54
 B6=6.42

Method: Ag and Bi electrodes. Medium: 2.9 M NO3. In 4.5 M: B4=5.42, B5=5.70

 Bi+++ ISE oth/un ? 2.50M U K1=2.44 1953YAb (4556) 55
 B4=5.0

 Bi+++ sol oth/un 25°C 1.0M U K2=0.66 1953YAb (4557) 56
 $K_s(\text{BiOL}(\text{s})+2\text{H}+\text{L}=\text{BiL}_2+\text{H}_2\text{O})=-1.9$
 $K_s(\text{BiOL}(\text{s})+2\text{H}+2\text{L}=\text{BiL}_3)=-1.23$
 $K_s(\text{BiOL}(\text{s})+2\text{H}+3\text{L}=\text{BiL}_4)=-1.20$
 K3=0.64

Medium: HNO3. K4=0.03, $K_s(\text{BiOL}+2\text{H}=\text{BiL}+\text{H}_2\text{O})=-2.54$

 Bi+++ sol none 25°C 0.0 U 1952LAb (4558) 57
 $K_s(\text{BiOL}_3+2\text{H}+3\text{L}=\text{BiL}_4+\text{H}_2\text{O})=-0.1$

 Bi+++ vlt oth/un 25°C 1.0M U 1951FIa (4559) 58
 $K_s(\text{BiOL}+\text{H}_2\text{O}=\text{Bi}+2\text{OH}+\text{Cl})=-34$
 B4=5.52

 Bi+++ ISE oth/un rt 2.50M U 1939BAb (4560) 59
 B4=5.37

 Bi+++ ISE none 25°C 0.0 U 1935VHa (4561) 60
 B4=5.54

 Bi+++ sol none 18°C 0.0 U 1923JKa (4562) 61
 $K_s(\text{BiOL}(\text{s})+\text{H}_2\text{O}=\text{Bi}+2\text{OH}+\text{L})=-30.8$

F- Fluoride; HL Fluoride CAS 7644-39-3 (201)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	NaClO4	30°C	2.0M	U			1969BOb (6785)		62
								K(Bi+HF=BiF+H)=1.41 K(Bi+2HF=BiF2+2H)=0.3 K(Bi+3HF=BiF3+3H)=2.70		
Bi+++	ix	NaClO4	25°C	1.89M	U			K1=4.7 B2=8.3 1967LDb (6786)		63
								K(Bi+HL=BiF+H)=1.71 K(Bi+2HL=BiF2+2H)=2.31		

Medium: HClO4

FClBrI HL (541)
Halides, comparative (for book data under ligand 80)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	sp	diox/w	25°C	100%	U	M		1966GBa (7388)		64
								K(BiICl2+BiI3=2BiI2Cl)=-0.8 K(BiCl3+BiI2Cl=2BiCl2)=0.56		
Bi+++	sp	NaClO4	?	1.0M	U	M		1956NHa (7389)		65
								K(Bi(Cl3Br2+2Br=BiClBr4)=0.52 K(BiCl2Br3+Br=BiClBr4)=-0.5 K(BiBr4Cl+Br=BiBr5+Cl)=-0.26		

Medium: HClO4

I- Iodide; HL Iodide CAS 10034-85-2 (20)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	ISE	alc/w	25°C	100%	U			K1=7.4 B2=15.1 1984GSc (7894)		66
								B3=21.0 B4=26.0		
Bi+++	EMF	non-aq	25°C	100%	U			K1=5.0 B2=10.6 1983SGa (7895)		67
								B3=16.0 B4=22.5 B5=26.1 B6=28.8		

Medium: DMF, 1.0 M NaClO4

Bi+++	sol	NaClO4	25°C	3.0M	U	T H		K1=2.91 B2=6.56 1972FKd (7896)		68
								B3=9.90 B4=12.36 B5=14.38		

B6=14.94
 Medium: (Li,H)ClO4. K1=3.64, B2=7.35, B3=10.72, B4=13.20, B5=15.25, B6=16.25(6 C);
 K1=3.00, B2=6.59, B3=10.00, B4=12.70, B5=14.75, B6=15.24(15 C); also 35, 45 C

 Bi+++ sol NaClO4 35°C 3.0M U T H K1=2.62 B2=6.35 1972FKd (7897) 69
 B3=9.78
 B4=11.90
 B5=13.72
 B6=14.79

Medium: (Li,H)ClO4. K1=2.92, B2=6.31, B3=9.53, B4=11.74, B5=13.56, B6=14.39(45 C)

 Bi+++ sp NaClO4 25°C 4.0M U 1968HJb (7898) 70
 K7=-1.3

2nd method: solubility. Alternatively K7K8=-2.05

 Bi+++ sp NaClO4 24°C 3.0M U 1967EHa (7899) 71

K4=2.42
 K5.K6=2.43
 K7=-0.85
 K(BiI3(s)=BiI3)=-2.45

Medium: 2 M NaClO4, 1 HClO4. By solubility, Bi/Hg electrode(20 C): K5.K6=3.85

 Bi+++ ix NaClO4 25°C 1.89M U K1=2.90 1967LDb (7900) 72
 Method: cation exchange. Medium: HClO4

 Bi+++ sp NaClO4 24°C 1.0M U K1=2.68 1964EHa (7901) 73
 Medium: HClO4

 Bi+++ sol NaClO4 20°C 3.0M U 1957AGa (7902) 74

Kso(BiI3)=-18.09
 B4=14.95
 K5=1.85
 K6=2.0

By Bi/Hg electrode B6=19.4

 Bi+++ sp NaClO4 25°C 0.50M U K1=3.63 1957FHa (7903) 75
 Medium: HClO4

 Bi+++ ISE KNO3 20°C 2.90M U 1953BGa (7904) 76
 B6=11.51

 NH3 L Ammonia CAS 7664-41-7 (414)
 Ammonia

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

 Bi+++ gl R4N.X 25°C 5.00M U K1=5.0 1985MMa (9098) 77

 NO3- HL Nitrate CAS 7697-37-2 (288)
 Nitrate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	ix	oth/un	25°C	1.0M	C		K1=0.74 B2=1.22 B3=1.54	1990S0a	(9587) 78
Medium: 1.0 M HNO ₃ /HClO ₄ . Method: tracer concentration of 210Bi.									
Bi+++	gl	NaClO ₄	25°C	3.00M	U	I M	K1=0.73 B3=0.87 B4=0.54 B5=1.90 B6=1.60	1976FKb	(9588) 79
B(BiBr(NO ₃) ₂)=3.60, B(BiBr(NO ₃) ₃)=3.26, B(BiBr(NO ₃) ₄)=3.45, B(BiBr ₂ (NO ₃) ₃)=6.14, B(BiBr ₃ (NO ₃) ₂)=7.20. Data also for I=1,2 and 3 and Cd/Zn complexes									
Bi+++	ISE	NaClO ₄	25°C	2.0M	U	TI	K1=0.72 B3=0.20 B4=0.58	1974FKb	(9589) 80
Method: Bi/Hg electrode. Medium:LiClO ₄ . K1=1.74, B2=2.55(I=0 corr). K1=0.72, B2=0.94(I=0.5). K1=0.81, B2=0.90, B3=0.72(I=1)									
Bi+++	ISE	NaClO ₄	25°C	3.0M	U	TI	K1=0.72 B3=0.11 B4=-0.22	1974FKb	(9590) 81
Method: Bi/Hg. Medium:LiClO ₄ . K1=0.92, B2=1.23, B3=1.08, B4=0.04(I=4)									
Bi+++	ISE	NaClO ₄	5°C	3.0M	U	T	K1=0.83 B3=1.08 B4=0.6 B5=-0.16 B6=-0.40	1974FKb	(9591) 82
Method:Bi/Hg electrode. Medium:HClO ₄ . K1=0.73, B2=1.05, B3=0.78, B4=0.62, B5=-0.15, B6=-0.4(55 C). K1=0.75, B2=1.12, B3=0.94, B4=0.72, B5=-0.30, B6=-0.40(15 C)									
Bi+++	ISE	NaClO ₄	25°C	3.0M	U	T H	K1=0.73 B3=0.87 B4=0.54 B5=-0.10 B6=-0.40	1974FKb	(9592) 83
Method:Bi/Hg electrode. Medium:HClO ₄ . DH(K1)=-4.4 kJ mol ⁻¹ K1=0.72, B2=1.15, B3=0.82, B4=0.5, B5=0.0, B6=-0.5(35 C)									
Bi+++	ix	NaClO ₄	?	1.0M	U		K1=0.96 K3=0.35 K4=0.07 K5=-0.18 K6=-0.56	1967KNc	(9593) 84
Bi+++	sol	oth/un	25°C	var	U		K1=1.38 B2=1.42 K(BiOL(s)+2H=Bi+L+H ₂ O)=-1.92	1967VGa	(9594) 85

At I=0 corr: K1=2.32, K2=0.67, K=-3.20

Bi+++ sol oth/un 25°C var U K1=1.26 1953YAb (9595) 86
Ks(BiOL(s)+2H=Bi+L+H2O)=-2.18

Bi+++ sol oth/un 25°C 0.0 U 1951SGa (9596) 87
Ks(BiOL(s)+2H=Bi+L+H2O)=-2.55

OH- HL Hydroxide (57)
Hydroxide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sol NaNO3 23°C 1.0M C I 1993KDa (11068) 88

*B2=-4.0
*B3=-10.0
*B4=-21.5
*B(6,12)=0.3

*Kso(BiONO3)=-1.2. Also data for 1.0 M NaClO4. *Kso(BiOClO4)=-0.9.

Bi+++ oth NaClO4 25°C 0.25M U 1987MRa (11069) 89

*K1=-1.4
*B2=-2.17
*B3=-2.84
*B4=-13.07

Method: electrophoresis, measured by Bi-205 and Bi-206

Bi+++ dis NaCl 25°C 1.0M C 1987SSc (11070) 90

K(Bi+OH+5Cl)=10.9
K(Bi+2OH+4Cl)=17.5
K(Bi+3OH+3Cl)=30.2

Extraction from 1.0 M (Na,H)Cl solution into dithizone(H2A)/CCl4, using
tracer concentration of 210Bi. K(Bi+3H2A(org)=Bi(HA)3(org)+3H)=4.63.

Bi+++ dis NaClO4 25°C 1.0M C I K1=12.0 B2=22.90 1982HSa (11071) 91

B3=33.9

Method: solvent extraction of 210Bi with dithizone/CCl4.
Also data for 1.0 M NaNO3.

Bi+++ sol NaCl 75°C ? U T 1982LKa (11072) 92

*B2=-1.15
*B3=-6.60
Kso(Bi(OH)3)=-5.07

Further data available for 200 and 300 C

Bi+++ gl NaClO4 37°C 0.15M C 1977WIa (11073) 93

*K1=-1.58
*B(6,12)=0.33

Bi+++ sp KNO3 22°C 0.10M U I K1=12.55 B2=24.68 1975ANb (11074) 94

B3=36.37

Bi+++ cal NaClO4 25°C 3.0M C H 1975OLb (11075) 95

*K1=-1.58

*B(6,12)=0.33

DH(*K1)=17 kJ mol⁻¹, DS(*K1)=27 J K⁻¹ mol⁻¹; DH(*B(6,12))=133, DS(*B(6,12))=450; DH(Bi+OH)=-38, DS(Bi+OH)=115; DH(6Bi+12OH)=-525, DS(6Bi+12OH)=1500.

Bi+++ gl NaClO4 ? 0.10M U 1974DNa (11076) 96

B4'=-2.77

B5'=-5.93

B7'=-6.70

Bn': 9Bi(OH)+nOH=Bi9(OH)(18+n)

Bi+++ sp NaClO4 ? 1.00M U 1972DNa (11077) 97

*K1=-1.55

*B2=-2.82

*B(6,12)=0.26

Bi+++ sp NaClO4 25°C 0.10M U 1972DNc (11078) 98

K=-3.9

*K(Bi9(OH)20)=-3.2

Ka(Bi9(OH)21)=-2.8

K: 3/2Bi6(OH)12+2H2O=Bi9(OH)20+2H; *K: Bi9(OH)20=Bi9O(OH)19+H

Bi+++ dis NaClO4 25°C 0.10M U K1=12.36 1971BIa (11079) 99

B3=31.94

B4=32.90

Bi+++ sol NaClO4 25°C 1.00M U 1971BIa (11080) 100

Ks(Bi(OH)3(s)+OH)=0.95

Kso=-37.29

Kso: 0.5alpha-Bi2O3(s) + 1.5H2O=Bi + 3OH

Bi+++ gl NaClO4 25°C 1.0M U 1960TOa (11081) 101

*B(6,12)=-0.53

*B(6,15)=-8.6(?)

*B(m,n): mBi+nH2O=Bim(OH)n+nH

Bi+++ gl NaClO4 25°C 1.0M U 1960TOa (11082) 102

*B(6,12)=-0.53

*B(6,15)=-8.6(?)

*B(m,n): mBi+nH2O=Bim(OH)n+nH

Bi+++ gl NaClO4 25°C 0.10M U 1959OLa (11083) 103

Ka(Bi9(OH)20)=-3.2

Ka(Bi9(OH)21)=-2.6

K(1.5Bi6(OH)12+2H2O=Bi9(OH)20+2H)=-3.5. Bi/Hg electrode also used

Bi+++ gl NaClO4 25°C 0.10M U 1959OLa (11084) 104

$Ka(\text{Bi}_9(\text{OH})_{20}) = -3.2$
 $Ka(\text{Bi}_9(\text{OH})_{21}) = -2.6$
 $K(1.5\text{Bi}_6(\text{OH})_{12} + 2\text{H}_2\text{O} = \text{Bi}_9(\text{OH})_{20} + 2\text{H}) = -3.5$. Bi/Hg electrode also used

 Bi+++ vlt none 12°C 0.0 U 1957KOb (11085) 105
 $K_{so}(\text{0.5Bi}_2\text{O}_3) = -31.5$

Bi+++ vlt none 12°C 0.0 U 1957KOb (11086) 106
 $K_{so}(\text{0.5Bi}_2\text{O}_3) = -31.5$

Bi+++ EMF NaClO4 25°C 3.0M U 1957OLa (11087) 107
 $*K_1 = -1.58$
 $*B(6\text{Bi} + 12\text{H}_2\text{O} = \text{Bi}_6(\text{OH})_{12}) = 0.33$

Bi+++ sp NaClO4 ? 1.20M U 1948SPa (11088) 108
 $*B(4,8) = -1.4$
 $*B(4,8): 4\text{Bi} + 8\text{H}_2\text{O} = \text{Bi}_4(\text{OH})_8 + 8\text{H}$

Bi+++ sp NaClO4 ? 1.20M U 1948SPa (11089) 109
 $*B(4,8) = -1.4$
 $*B(4,8): 4\text{Bi} + 8\text{H}_2\text{O} = \text{Bi}_4(\text{OH})_8 + 8\text{H}$

Bi+++ sol oth/un 25°C var U 1943SRa (11090) 110
 $K_{s4} = -5.30$
 Medium: NaOH. $K_{s4}: \text{0.5Bi}_2\text{O}_3 + 1.5\text{H}_2\text{O} + \text{OH} = \text{Bi}(\text{OH})_4$

Bi+++ sol oth/un 25°C var U 1943SRa (11091) 111
 $K_{s4} = -5.30$
 Medium: NaOH. $K_{s4}: \text{0.5Bi}_2\text{O}_3 + 1.5\text{H}_2\text{O} + \text{OH} = \text{Bi}(\text{OH})_4$

Bi+++ ISE NaClO4 18°C 0.50M U 1936HOa (11092) 112
 $*B(2,4) = -1.60$
 $*B(2,5) = -4.60$
 $*B(m,n)(m\text{Bi} + n\text{H}_2\text{O} = \text{Bi}_m(\text{OH})_n + n\text{H})$. Method: Bi and quinhydrone electrodes

Bi+++ vlt oth/un ? var U 1925BAa (11093) 113
 $K_{so} = -30.37$

 O2 L Oxygen CAS 7782-44-7 (83)
 Dioxide, also oxide; O²⁻, and superoxide, O₂⁻

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	non-aq	450°C	100%	U			K1=3.0 K3=3.2	1974SPb (12609)	114

Ligand=Oxide, O²⁻; Medium: fused(Li,K)Cl

 PO4³⁻ H3L Phosphate CAS 7664-38-2 (176)
 Phosphate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	oth/un	20°C	var	U			Kso(BiL)=-23.5	1958KBa (13117)	115

Bi+++	sol	oth/un	18°C	var	U			Kso=-21.14	1958KCb (13118)	116
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Bi+++	sol	oth/un	18°C	var	U			Kso(BiL)=-22.89	1951ZHa (13119)	117
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S--
Sulfide; H2L Sulfide CAS 7783-06-4 (705)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	oth	none	25°C	0	U			Kso(Bi2S3)=-115.1 *Kso(Bi2S3)=-63.1	1988LIa (14324)	118

Derived from thermodynamic data and K(H+S=HS)=17.3.

Bi+++	oth	none	25°C	0.0	U				1964PCa (14325)	119
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From thermodynamic data. K(0.5Bi2L3(s)+3H=Bi+1.5H2S(g))=-13.6.
Alternative value: K=-20.3

Bi+++	oth	none	25°C	0.0	U			Kso(Bi2L3)=-96	1952GGc (14326)	120
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From thermodynamic data

Bi+++	sol	none	25°C	0.0	U			Kso(Bi2L3)=-88.72	1937KAa (14327)	121
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Bi+++	ISE	oth/un	rt	var	U			Kso(Bi2L3)=-71.8?	1931K0a (14328)	122
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Method: Bi electrode. Medium:NaHS. K(0.5Bi2L3(s)+3H=Bi+1.5H2L(g))=-1.5?

Bi+++	ISE	oth/un	rt	var	U			Kso(Bi2L3)=-90.5	1909BZa (14329)	123
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Method: Bi electrode. Medium:NaHS. K(0.5Bi2L3(s)+3H=Bi+1.5H2L(g))=-10.8

SCN-
Thiocyanate; HL Thiocyanate CAS 463-56-9 (106)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	ISE	alc/w	25°C	100%	U			K1=4.2 B2=7.54 B3=9.54 B4=11.4	1984GSc (14827)	124

Bi+++	EMF	non-aq	25°C	100%	U	T		K1=1.9 B2=3.9	1983SGa (14828)	125
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B3=6.2

B4=7.8

Medium: DMF, 1.0 M NaClO4

 Bi+++ ISE oth/un 25°C 3.0M U T T K1=1.28 B2=2.67 1971FKe (14829) 126
 B3=3.74
 B4=5.2
 B5=5.9
 B6=6.9

Medium: LiClO4. K1=1.08, B2=2.48, B3=3.4, B4=4.6, B5=5.5, B6=6.4(15 C); K1=1.54, B2=2.72, B3=4.1, B4=5.4, B5=5.9, B6=6.8(35 C). Method: Bi amalgam electrode

 Bi+++ ISE NaClO4 45°C 3.0M U T K1=1.7 B2=3.1 1971FKe (14830) 127
 B3=4.3
 B4=5.5
 B5=5.5
 B6=6.15

Medium: LiClO4; K1=1.7, B2=3.4, B3=4.3, B4=5.15, B5=5.5, B6=6.9(55 C).

Bi amalgam electrode. At I=0: K1=2.21, B2=3.7, B3=4.4, B4=5.2, B5=5.8, B6=5.4

 Bi+++ sp NaClO4 ? 3.90M U 1966JLa (14831) 128
 K(BiL5Br+L=BiL6+Br)=-2.03
 K(BiL3Br3+2L=BiL5Br+2Br)=-2.77
 B(BiL5Br)=6.21
 B(BiL3Br3)=9.0

Medium: 3.9 Na+, 0.25 H+(ClO4). B6=4.18

 Bi+++ sol NaClO4 25°C 2.0M U T 1965JLb (14832) 129
 B(BiClL)=4.71
 B(BiClL2)=5.67
 B(BiBrL)=4.08
 B(BiBrL2)=5.30

 Bi+++ ISE KNO3 20°C 0.40M U I K1=0.83 B2=1.92 1959GBc (14833) 130
 B3=2.74
 B4=3.40

Method: Bi/Hg electrode. In B5=3.25, B6=3.19

 Bi+++ sp oth/un 20°C 2.70M U 1949GBa (14834) 131
 B6=2.33

Medium: 2.7 M CH3CO2H

 Bi+++ sp NaClO4 20°C 5.0M U I K1=1.03 1949KHb (14835) 132
 Medium: HClO4. In 0.4 M HClO4: K1=1.15, K2=1.11, K2*K4=1.15, K5*K6=0.82

S04-- H2L Sulfate CAS 7664-93-9 (15)

Sulfate;

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ ISE NaClO4 25°C 1.00M U I K1=1.77 B2=3.16 1981FKb (16031) 133
Medium: LiClO4.

Bi+++ ISE NaClO4 15°C 3.0M U T H K1=1.97 B2=3.18 1971FKd (16032) 134
B3=4.01
B4=4.60
B5=4.79

Medium: LiClO4. At 25 C: K1=1.98,B2=3.41,B3=4.08,B4=4.34,B5=4.6. 45 C: 2.16,
3.90,5.04,5.10,5.39. 65 C: 2.22,3.90,5.14,5.93,5.69

SeCN- HL Selenocyanate CAS 73102-11-2 (440)
Selenocyanate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq ? 100% U 1972ZSa (16981) 135
B(Bi(SCN)5L)=10.15

Medium: acetonitrile. B=9.15 in Chem. Abstr.

CH4N2S L Thiourea CAS 62-56-6 (51)
Thiocarbamide, Thiourea; (H2N)2CS

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 24°C 1.68M U T B2=1.70 1980HSa (17812) 136

Bi+++ sp NaClO4 25°C 1.00M U K1=1.19 1979FFa (17813) 137

Bi+++ sp NaClO4 25°C 1.00M U K1=1.19 1978FBa (17814) 138

Bi+++ sp NaClO4 25°C 1.00M U K1=1.47 1978FBa (17815) 139

Medium: 20%(vol) EtOH/H2O; Data for 40 and 60% EtOH/H2O and other media
also given

Bi+++ sp NaClO4 25°C 1.00M U I K1=1.24 1978GFc (17816) 140

Bi+++ sp NaClO4 ? 3.0M U I K1=2.40 B2=3.55 1967VGa (17817) 141
K3=0.32

Medium: 1 M HClO4,x NaClO4. K1=2.28(x=0), 2.35(x=1); K2=1.04(x=0),1.05(x=1);
K3=0.32(x=0),0.30(x=1). At I=0 corr: K1=2.24, K2=0.96, K3=0.30

Bi+++ sp NaClO4 20°C 0.90M U B6=9.3 1966SIc (17818) 142

Medium: HClO4, 18-22 C

C2H2O4 H2L Oxalic acid CAS 144-62-7 (24)
Ethanedioic acid; (COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ oth NaClO4 25°C 0.20M U I K1=7.65 B2=12.46 1987RHa (18820) 143
Using Electromigration with a radioactive Bi tracer.

Bi+++ dis oth/un 20°C 0.10M U 1963STc (18821) 144
Kso=-35.4

Medium: KClO4

C2H5NO2 HL Glycine CAS 56-40-6 (85)
2-Aminoethanoic acid; H2N.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M U K1=10.0 1993HCa (21505) 145
K(BiL+OH)=9.8

Medium: 0.5 M HNO3.

C2H6N2S L Methyl-Thiourea CAS 598-52-7 (1077)
N-Methylthiourea; CH3.NH.CS.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 1.00M U K1=1.45 1979FFa (22008) 146

C2H6OS HL CAS 60-24-2 (841)
2-Mercaptoethanol; HS.CH2.CH2.OH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 1.0M U K1=13.63 B2=25.03 1984JHa (22062) 147
B3=35.48

C3H4O4 H2L Malonic acid CAS 141-82-2 (79)
Propanedioic acid; CH2(COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF KNO3 25°C 0.10M C B2=11.20 1984CAa (24409) 148
*K(BiL2)=-4.20
*K(BiH-1L2)=-5.50

Method: Bi(Hg) electrode.

C3H7NO2S H2L Cysteine CAS 52-90-4 (96)
2-Amino-3-mercaptopropanoic acid; H2N.CH(CH2.SH)COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 0.50M U 1982NAb (26756) 149
K(Bi+HL)=12.28
K(BiHL+HL)=8.48

C3H7NS2 HL CAS 128-04-1 (2125)
Dimethyldithiocarbamic acid; (CH3)2N.CSSH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U 1987USa (27274) 150

B3=27.6

Medium: DMF, 0.1 M LiClO4

C3H8N2S L Ethyl-thiourea CAS 625-53-6 (1079)
N-Ethylthiourea; C2H5.NH.CS.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 1.00M U K1=1.46 1979FFa (27631) 151

C3H8O3S3 H3L Unithiol CAS 74-61-3 (1271)
2,3-Dimercaptopropanesulfonic acid; HS.CH2.CH(SH).CH2.SO3H

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis oth/un ? ? U 1970PRb (27783) 152

K(BiOH+L)=19.7

C4H4O4 H2L Fumaric acid CAS 110-17-8 (289)
trans-Butenedioic acid; HOOC.CH:CH.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ oth NaClO4 25°C 0.20M U I K1=6.90 1987RHa (29180) 153

Using electromigration with a radioactive Bi tracer.

C4H6O4 H2L Succinic acid CAS 110-15-6 (112)
1,4-Butanedioic acid; HOOC.CH2.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ oth NaClO4 25°C 0.20M U I K1=8.76 1987RHa (29950) 154

Using electromigration with a radioactive Bi tracer.

Bi+++ EMF KNO3 25°C 0.10M C B2=11.60 1984CAa (29951) 155

*K(BiL2)=-4.5

*K(BiH-1L2)=-5.00

K(BiL2+H)=3.70

K(BiHL2+H)=2.50

Method: Bi(Hg) electrode.

C4H6O4S2 H4L CAS 304-55-2 (3002)
meso-2,3-Dimercaptobutanedioic acid (meso-dithiotartaric acid)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	gl	KNO3	25°C	0.10M	C			B2=43.87 B(BiHL2)=53.5 B(BiH2L2)=58.5 B(BiH3L2)=62.0 B(BiH4L2)=64.8	1991HCa (30429)	156

B(BiH5L2)=67.0

C4H6O5 H2L Malic acid CAS 617-48-1 (393)
2-Hydroxybutane-1,4-dioic acid, Hydroxy-succinic acid; HOOC.CH2.CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	ISE	oth/un	25°C	?	U			K1=9.90	1986SRa (30597)	157
Bi+++	vlt	oth/un	25°C	3.00M	U			K(Bi+5HL)=16.53	1970CVb (30598)	158

Medium: Na2SO4

C4H6O5 H2L Diglycolic acid CAS 110-99-6 (243)
Di(carboxy)methyl ether, 2,2'-Oxydiethanoic acid; HOOC.CH2.O.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	sp	NaClO4	25°C	0.50M	U			K1=7.69 B2=12.73 B3=16.19	1981NPa (30855)	159

C4H6O6 H2L L-Tartaric acid CAS 87-69-4 (92)
L-Tartaric acid, L-2,3-Dihydroxybutanedioic acid; HOOC.CH(OH).CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	EMF	KNO3	25°C	0.10M	C			B2=11.70 K(BiL2+H)=3.00 *K(BiL2)=-3.70 *K(BiH-1L2)=-4.50	1984CAa (31211)	160

Method: Bi(Hg) electrode.

Bi+++	vlt	oth/un	25°C	3.00M	U			K(Bi+HL)=7.56	1970CVb (31212)	161
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Medium: Na2SO4

Bi+++	dis	NaClO4	20°C	0.10M	U			B2=11.3	1963STc (31213)	162
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C4H7NO4 H2L Aspartic acid CAS 56-84-8 (21)
Aminobutanedioic acid; H2N.CH(CH2.COOH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Bi+++ gl NaClO4 25°C 0.10M U K1=10.47 B2=19.12 1972SSe (31827) 163
K3=3.67

C4H7N04 H2L IDA CAS 142-73-4 (118)
Iminodiethanoic acid; HN(CH2.COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 0.50M U K1=12.94 1976KIa (32204) 164

C4H8N2O4 H2L HDA CAS 19247-05-3 (1025)
Hydrazine-N,N'-diethanoic acid; HOOC.CH2.NH.NH.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 20°C 0.10M U K1=12.50 1987IKa (33081) 165

C4H10N2S L CAS 2489-77-2 (2568)
N,N,N'-Trimethylthiocarbamide; (CH3)2N.CS.NH.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 1.00M U K1=1.05 1979FFa (34632) 166

C4H13N3 L Dien CAS 111-40-0 (584)
1,4,7-Triazaheptane, 2,2'-Iminobis(ethylamine), diethylenetriamine;
NH2.(CH2)2.NH.(CH2)2.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M C K1=17.4 1995HCb (35767) 167

K(BiL+H)=3.9
K(BiL+OH)=8.1

C5H6 HL Cyclopentadiene CAS 542-92-7 (4288)
Cyclopentadiene; cyclo(-CH:CH.CH2.CH:CH-)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp oth/un 25°C dil U B2=10.5 1972BSf (37073) 168

C5H7N04S2 H3L CAS 36061-59-3 (1953)
Bis(carboxymethyl)dithiocarbamic acid; (HOOC.CH2)2.N.CSSH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF KNO3 22°C 1.00M U K1=10.94 B2=21.36 1970TPb (37556) 169
B3=31.05

C5H9N04 H2L Glutamic acid CAS 56-86-0 (22)

2-Aminopentanedioic acid; H2N.CH(CH2.CH2.COOH)COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl NaClO4 25°C 0.10M U K1=10.47 B2=18.75 1972SSe (39072) 170
K3=3.50

C5H10O5S2 HL CAS 110-50-9 (591)
(Butoxy)dithiomethanoic acid; CH3.CH2.CH2.CH2O.CSSH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis oth/un 25°C 0.25M U B3=28.3 1982SAa (40156) 171

C5H11NS2 HL CAS 147-84-2 (2126)
Diethyldithiocarbamic acid; (CH3.CH2)2N.CSSH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U B3=27.9 1987USa (41347) 172

Medium: DMF, 0.1 M LiClO4

Bi+++ ISE non-aq 25°C 100% U K1=11.2 B2=21.6 1984LSb (41348) 173
B3=29.6

Medium: DMSO, 0.1 M NaClO4; Ag-electrode

Bi+++ sp non-aq ? 100% U M K(BiL3+2H2A=Bi(HA)3+3HL)=5.72 1968SRg (41349) 174

Medium: CCl4. H2A=dithizone.

C5H12N2S L CAS 1576-32-1 (1518)
N-Butylthiourea; C4H9.NH.CS.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 1.00M U K1=1.55 1979FFa (41631) 175

C5H12O3S4 H3L CAS 19872-38-9 (4331)
2,3-Dimercaptopropylthioethanesulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis oth/un ? ? U K(BiOH+L)=19.3 1971EPd (41653) 176

C5H12O4S3 H3L CAS 19872-36-7 (4332)
2,3-Dimercaptopropanoxyethanesulfonic acid; HS.CH2.CH(SH).CH2.O.CH2.CH2.HSO3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	dis	oth/un	?	?	U				1971EPd (41667)	177
K(BiOH+L)=19.5										

C5H12O5S4		H3L						CAS 35617-14-2 (4333)		
2,3-Dimercaptopropanesulfonethanesulfonic acid; HS.CH2.CH(SH).CH2.SO2.CH2CH2.HS03										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	dis	oth/un	?	?	U				1971EPd (41698)	178
K(BiOH+L)=19.7										

C6H5ClO3		HL						CAS 7559-81-1 (8317)		
2-Chloromethyl-5-hydroxy-4H-pyran-4-one;										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	KN03	30°C	0.50M	C			K1=10.38 B2=17.99 B3=24.98	1985KNa (42336)	179
Method: polarography										

C6H5NO2		HL						CAS 98-98-6 (391)		
2-Pyridine-carboxylic acid; C5H4N.COOH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	NaN03	25°C	0.50M	C			K1=7.48 B2=13.94 B3=18.10 B4=20.47 K(Bi+OH+3L)=26.65	2004CZa (42503)	180
Methods: virtual potentiometric data from DC and DP polarography.										

C6H6		L						CAS 71-43-2 (2143)		
Benzene, cyclohexatriene;										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	dis	non-aq	25°C	100%	U				1987TUa (43165)	181
K(BiI3+L)=1.42										
Medium: CHCl3										

C6H6O3		HL						CAS 118-71-8 (2442)		
3-Hydroxy-2-methyl-4H-pyran-4-one;										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	KN03	30°C	0.50M	C			K1=11.90 B2=20.88 B3=29.57	1985KNa (44078)	182
Method: polarography										

C6H6O4 HL Kojic acid CAS 501-30-4 (1800)
5-Hydroxy-2-(hydroxymethyl)-4H-pyran-4-one;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	KNO3	30°C	0.50M	C			K1=10.78 B2=19.34 B3=26.85	1985KNa (44199)	183

Method: polarography

C6H6O8S2 H4L Tiron CAS 149-45-1 (104)
4,5-Dihydroxybenzene-1,3-disulfonic acid; (HO)2.C6H2(SO3H)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	EMF	KNO3	25°C	0.10M	C			K1=21.90 B2=36.20	1984CAa (44415)	184

Method: Bi(Hg) electrode.

C6H8N2 L 2-Picolylamine CAS 29722-36-9 (502)
2-(Aminomethyl)pyridine; C5H4N.CH2NH2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	oth/un	25°C	0.50M	C			K1=9.6	1995HCb (45350)	185

C6H8O6 H2L Ascorbic acid CAS 50-81-7 (285)
Ascorbic acid (Vitamin C);

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	sp	NaClO4	25°C	0.50M	U			K1=25.3 B(BiH2L)=30.8 B(BiOHL)=22.3	1971EPc (45630)	186

C6H8O7 H3L Citric acid CAS 77-92-9 (95)
2-Hydroxypropane-1,2,3-tricarboxylic acid; HOOCCH2.CH(OH)(COOH).CH2COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	ISE	oth/un	25°C	?	U			K1=13.48	1986SRa (46048)	187
Bi+++	EMF	KNO3	25°C	0.10M	C			K1=11.80 *K(BiL)=-3.60	1984CAa (46049)	188

Method: Bi(Hg) electrode.

Bi+++	gl	NaClO4	37°C	0.15M	C			K1=10.78 B2=15.83	1977WIa (46050)	189
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C6H9NO6 H3L NTA CAS 139-13-9 (191)
Nitrilotriethanoic acid; N(CH2.COOH)3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	NaClO4	25°C	0.60M	U			K1=17.55	1987KTa (46718)	190
Bi+++	vlt	NaCl	25°C	4.00M	U	H		K1eff=11.93 (?)	1984GSa (46719)	191
Bi+++	vlt	NaClO4	25°C	0.10M	C			K1=18.2	1976ENa (46720)	192
Method: polarography. Medium: 0.1 M HClO4.										
Bi+++	sp	NaClO4	25°C	1.00M	U		T	K1=17.54 B2=26.55	1970KVb (46721)	193
Bi+++	gl	KNO3	25°C	0.10M	U	M			1964PCa (46722)	194
K(BiL+H2A=BiLHA+H)=-1.80										
K(BiLA+H)=3.84										

H2A=tiron

 C6H11NO5 H2L HIMDA CAS 93-62-9 (192)
 N-(2-Hydroxyethyl)iminodiethanoic acid; HO.CH2.CH2.N(CH2.COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	sp	NaClO4	20°C	0.10M	U			K1=14.82	1978KIb (48695)	195

C6H12O7		HL							CAS 526-95-4 (904)	
D-Gluconic acid, 2,3,4,5,6-Pentahydroxyhexanoic acid; HO.CH2(CHOH)4.COOH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	gl	NaNO3	25°C	0.10M	C	T			1999FSa (49701)	196
B(BiH-2L)=4.1										
B(BiH-4L)=-15.95										
K(BiH-2L+H)=3.48										
At 20 C: B(BiH-2L)=4.2, B(BiH-4L)=-15.8, K(BiH-2L+H)=3.41.										

C6H14N2O2 HL Lysine CAS 56-87-1 (41)
 2,6-Diaminohexanoic acid; H2N.(CH2)4.CH(NH2)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	gl	KNO3	15°C	1.0M	U	T			1989SSg (50817)	197
K(Bi+HL)=5.15										
K(BiHL+HL)=2.97										

Also data for 30 C.

 C6H15NO3 Triethanolamine CAS 102-71-6 (447)
 Tris-(2-hydroxyethyl)amine; L

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Bi+++ vlt oth/un 25°C 0.50M U K1=9.2 1993HCa (51284) 198
K(BiL+OH)=10.3

Medium: 0.5 M HNO3.

C6H18N4 L Trien-tetramine CAS 112-24-3 (11)
1,4,7,10-Tetraazadecane; H2N.CH2.CH2.NH.CH2.CH2.NH.CH2.CH2.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M U K1=21.9 1993HCa (52091) 199
B(BiHL)=25.0
K(BiL+OH)=8.0

Medium: 0.5 M HNO3.

C7H6N2S HL CAS 583-39-1 (2043)
2-Mercaptobenzimidazole;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp alc/w 20°C 0.00 U I 1977JCa (53527) 200
K(Bi(HL)3)=3.54

3.45 M EtOH. In 2.47 M DMF, K=3.18

C7H8 L CAS 108-88-3 (2144)
Toluene; C6H5.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis non-aq 25°C 100% U K(BiI3+L)=1.62 1987TUa (55783) 201

Medium: CHCl3

C7H8N2S HL Phenylthiourea CAS 103-85-5 (625)
1-Phenyl-2-thiourea; C6H5.NH.CS.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp alc/w 25°C 58% U T H K1=.045 B2=2.15 1983LXa (55944) 202
B3=5.15
B4=7.63
B5=10.16

Medium: 58%(v/v) EtOH/H2O, 1 M HClO4

C8H5O2F3S HL TTA CAS 326-91-0 (165)
4,4,4-Trifluoro-1-(2-thienyl)butane-1,3-dione; F3C.CO.CH2.CO.C4H3S

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis NaClO4 25°C 1.0M U K1=7.75 B2=15.73 1969BRa (58606) 203
B3=23.22

C8H6N2S3 HL Bismuthol II CAS 17654-88-5 (8359)
3-Phenyl-1,3,4-thiadiazol-2-thione;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis NaClO4 20°C 0.4M U K1=12.54 B2=24.64 1985SSf (58808) 204
B3=36.42

C8H6O4 H2L Phthalic acid CAS 88-99-3 (113)
Benzene-1,2-dicarboxylic acid; C6H4(COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF KNO3 25°C 0.10M C B2=12.50 1984CAa (58952) 205
*K(BiL2)=-4.60
*K(BiH-1L2)=-5.10

Method: Bi(Hg) electrode.

C8H8O4 L (601)
4,5-Dimethoxy-1,2-benzoquinone;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ nmr non-aq 34°C 100% U M K(BiCl3+L)=1.99 1981KKc (60111) 206

Medium: nitromethane

C8H10N2S L CAS 2724-69-8 (2570)
N,N'-Methylphenylthiocarbamide; CH3.NH.CS.NH.C6H5

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 1.00M U K1=1.04 1979FFa (60776) 207

C8H16O4 L 12-Crown-4 CAS 294-93-9 (174)
1,4,7,10-Tetraoxacyclododecane; cyclo(-O.(CH2.CH2.O)3.CH2.CH2-)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt R4N.X 25°C 0.2M U K1=16.1 1999BBc (62663) 208
Medium: 0.2 M Bu4NPF6.

C8H20N4 L Cyclen CAS 294-90-6 (10)
1,4,7,10-Tetraazacyclododecane; cyclo(-(NH.CH2.CH2.)4-)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M U K1=23.45 1998CLb (63285) 209
By differential pulse polarography on pre-equilibrated solutions.

Medium: 0.5 M HNO3.

Bi+++ vlt KNO3 25°C 0.50M C K1=23.45 1997LCa (63286) 210
Medium: HNO3

C8H23N5 L Tetren CAS 112-57-2 (715)
1,4,7,10,13-Pentaazatridecane (Tetraethylenepentamine);

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M C K1=23.9 1995HCb (63467) 211
K(BiL+OH)=6.9

C9H7N03S2 H2L CAS 58447-10-2 (4675)
8-Mercaptoquinoline-5-sulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp oth/un ? ? U K1=13.4 B2=23.90 1968ABa (64423) 212
K3=7.2

C9H7NS HL CAS 76076-35-2 (5695)
2-Mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U K1=11.0 B2=18.20 1986UBa (64612) 213
K3=5.1

Medium: dimethylformamide, LiClO4

C9H7NS HL Quinolinethiol CAS 491-33-8 (1028)
8-Mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl non-aq 25°C 100% U K1=12.7 B2=21.0 1984UBa (64646) 214
Medium: DMF, 0.1 M LiClO4. Similar data to reference UB83a

Bi+++ EMF non-aq 25°C 100% U K1=12.7 B2=21.00 1983UBa (64647) 215
Medium: DMF, 0.1 M LiClO4

C9H7N3O2S H2L TAR CAS 2246-46-0 (707)
4-(2'-Thiazolylo)-resorcinol; C3H2NS.N:N.C6H3(OH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 20°C 0.10M U 1966HSb (64697) 216
K(Bi+HL)=13.11

K adjusted to give assumed microscopic formation constants

C9H12 L Cumene CAS 98-82-8 (1177)
Isopropylbenzene, 2-Phenylpropane; C6H5.CH(CH3)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis non-aq 25°C 100% U 1987TUa (66543) 217
K(BiI3+L)=1.78

Medium: CHCl3

C9H19NS2 HL CAS 150-11-8 (1154)
N,N-Di(n-butyl)dithiocarbamate; (C4H9)2N.CSSH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U 1987USa (67989) 218
B3=28.6

Medium: DMF, 0.1 M LiClO4

C10H8N2 L 2,2'-Bipyridyl CAS 366-18-7 (25)
2,2'-Bipyridine; (C5H4N)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M U K1=4.5 1993HCa (69531) 219
Medium: 0.5 M HNO3.

C10H9NO3S2 HL (7206)
6-Methyl-5-sulfo-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp oth/un 20°C 0.10M U K1=14.5 B2=24.20 1985DAb (70175) 220
K3=6.9

C10H9NS HL CAS 10222-10-3 (1029)
2-Methyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl non-aq 25°C 100% U K1=12.4 B2=21.6 1984UBa (70264) 221
Medium: DMF, 0.1 M LiClO4. Similar data to reference UB83a

Bi+++ EMF non-aq 25°C 100% U K1=12.4 B2=21.60 1983UBa (70265) 222
Medium: DMF, 0.1 M LiClO4

C10H9NS HL CAS 13982-83-7 (1030)
4-Methyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl non-aq 25°C 100% U K1=13.3 B2=24.1 1984UBa (70276) 223
Medium: DMF, 0.1 M LiClO4. Similar data to reference UB83a

Bi+++ EMF non-aq 25°C 100% U K1=13.3 B2=24.10 1983UBa (70277) 224
Medium: DMF, 0.1 M LiClO4

C10H9NS HL CAS 15759-04-3 (1031)
6-Methyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl non-aq 25°C 100% U K1=13.6 B2=25.0 1984UBa (70290) 225
Medium: DMF, 0.1 M LiClO4. Similar data to reference UB83a

Bi+++ EMF non-aq 25°C 100% U K1=13.6 B2=24.71 1983UBa (70291) 226
Medium: DMF, 0.1 M LiClO4

C10H9NS HL CAS 15759-05-4 (1032)
7-Methyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl non-aq 25°C 100% U K1=13.5 B2=23.3 1984UBa (70302) 227
Medium: DMF, 0.1 M LiClO4. Similar data to reference UB83a

Bi+++ EMF non-aq 25°C 100% U K1=13.5 B2=23.30 1983UBa (70303) 228
Medium: DMF, 0.1 M LiClO4

C10H9NS2 HL CAS 32433-56-0 (5691)
5-Thiomethyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U K1=12.3 B2=21.50 1986UBa (70309) 229
K3=6.8

Medium: dimethylformamide, LiClO4

C10H9NS2 HL CAS 91330-90-0 (5693)
7-Thiomethyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U K1=12.7 B2=19.10 1986UBa (70314) 230
K3=4.5

Medium: dimethylformamide, LiClO4

C10H9N3 L Dipyridylamine CAS 1202-34-2 (2428)
(2,2'-Dipyridyl)amine; C5H4N.NH.C5H4N

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M C K1=9.0 B2=16.40 1995HCb (70338) 231

C10H14 L Durene CAS 95-93-2 (2828)
1,2,4,5-Tetramethylbenzene; C6H2.(CH3)4

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ dis non-aq 25°C 100% U 1987TUa (72037) 232
K(BiI3+L)=2.38

Medium: CHCl3

C10H16N2O8 H4L EDTA CAS 60-00-4 (120)
1,2-Diaminoethane-N,N,N',N'-tetraethanoic acid, Sequestric acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt NaClO4 25°C 1.00M U K1=26.41 1987KTa (73619) 233

Bi+++ gl NaNO3 25°C 5.00M U M 1982EFb (73620) 234

K(BiL+Br)=1.5
K(BiL+SCN)=1.7
K(BiL+ONO)=5.1
K(BiL+thiourea)=3.1

K(BiL+I)=1.7; K(BiL+S03)=2.7; K(BiL+S2O3)=3.1

Bi+++ sp NaClO4 25°C 1.0M U K1=25.68 1973KIa (73621) 235
K(BiL+H)=0.90

Bi+++ vlt oth/un ? 3.60M U K1=27.93 1969SVd (73622) 236
Medium: 3.6 M HNO3. In 1.78 M HNO3, K1=27.93

Bi+++ EMF NaClO4 20°C 1.0M U T K1=26.7 1967BAC (73623) 237
K(BiL+H)=1.7
K(BiL+OH)=2.96

Bi+++ vlt KNO3 25°C 0.50M U K1=28.2 1966BGa (73624) 238

Bi+++ sp NaClO4 25°C 1.0M U 1965BIb (73625) 239
K(BiO+L+2H)=26.5

Bi+++ ISE NaClO4 20°C 0.10M U K1=27.4 1964EIA (73626) 240

Bi+++ vlt NaClO4 25°C 0.10M U I K1=28.8 1964EIA (73627) 241
K1=30.5(I=1.0)

Bi+++ gl KNO3 25°C 0.10M U 1964PCa (73628) 242
K(BiL+H)=1.43

Bi+++ dis NaClO4 20°C 0.10M U 1963STc (73629) 243

B(BiL(OH))=32.45

Medium: KClO4

Bi+++ vlt oth/un 20°C 0.10M U K1=27.9 1961MSa (73630) 244

Bi+++ sp oth/un ? 0.10M U K1=22.8 1960KVa (73631) 245

C10H18N2O7 H3L HEDTA CAS 150-39-0 (392)
N-(Hydroxyethyl)diaminoethane-N,N',N'-triethanoic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 20°C 1.00M U K1=24.11 1976KNa (75339) 246
K(BiOH+L)=20.27

Bi+++ sp NaClO4 20°C 0.50M U K1=21.8 1967NKb (75340) 247

Bi+++ sp NaClO4 25°C 1.0M U K(BiO+L+2H)=22.3 1966BIb (75341) 248

C11H8N6O HL (7009)
1-(5-Tetrazolyl)azo-2-naphthol;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 20°C 1.00M U K1=14.13 1978SSf (76926) 249

C11H8O3 L CAS 18916-57-9 (581)
4-Methoxy-1,2-naphthoquinone;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq 34°C 100% U HM K(BiCl3+L)=1.75 1981KKb (77138) 250

Medium: nitromethane

C11H9N3O2 H2L PAR CAS 1141-59-9 (636)
4-(2'-Pyridylazo)-1,3-dihydroxybenzene; C5H4N.N:N.C6H3(OH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 20°C 0.10M U K(Bi+HL)=17.2 1966HSb (77528) 251

Bi+++ sp oth/un ? ? U K(Bi+HL)=18.2 1961HSb (77529) 252

C11H11NS HL CAS 54128-50-6 (1033)
2,7-Dimethyl-8-mercaptoquinoline;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	gl	non-aq	25°C	100%	U		K1=13.7 B2=23.1	1984UBa (77859)	253

Medium: DMF, 0.1 M LiClO4. Similar data to reference UB83a

Bi+++	EMF	non-aq	25°C	100%	U		K1=13.7 B2=23.10	1983UBa (77860)	254
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Medium: DMF, 0.1 M LiClO4

C11H11NS2 HL CAS 54487-80-8 (5694)
 2-Methyl-(5-thiomethyl)-8-mercaptoquinoline;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	EMF	non-aq	25°C	100%	U		K1=12.4 B2=23.00 K3=6.5	1986UBa (77866)	255

Medium: dimethylformamide, LiClO4

C11H13N3OS L CAS 7420-45-3 (4869)
 1-Benzoyl-4-allylthiosemicarbazide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	non-aq	25°C	100%	U		B3=3.55	1971CFa (78713)	256

Medium: acetone.

C11H26N4 L CAS 15439-16-4 (7)
 1,4,8,12-Tetraazacyclopentadecane; cyclo(-(NH.CH2.CH2.(N.(CH2)3.)3-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	vlt	oth/un	25°C	0.50M	U		K1=23.5 K(BiL+H)=3.5 K(BiL+OH)=8.5	1993HCa (79991)	257

Medium: 0.5 M HNO3.

C12H13NS HL CAS 54421-21-5 (1034)
 2-(2-Propyl)-8-mercaptoquinoline;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	gl	non-aq	25°C	100%	U		K1=7.2 B2=14.2	1984UBa (81255)	258

Medium: DMF, 0.1 M LiClO4

C12H27N3O3 L THETAC (7199)
 1,4,7-Tris(hydroxyethyl)-1,4,7-triazacyclononane

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	vlt	NaNO3	25°C	0.5M	C		K1=16.36	1996CHa (84084)	259

Method: Differential Pulse Polarography

Bi+++ vlt NaNO3 25°C 0.50M U K1=16.34 1996LHb (84085) 260

C13H11N3O4S2 HL Tenoxicam CAS 59804-37-4 (8393)
4-Hydroxy-2-methyl-N-2'-pyridinyl-2H-thien[2,2-e]-1,2-thiazine-3-carboxamide-1,1-di
oxide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl mixed 25°C 50% C K3=5.6
2002Mwa (85287) 261

Medium: 50% v/v CH3CN/H2O, 0.05 M NaNO3.

C13H12N4S L Dithizone CAS 60-10-6 (1801)
Diphenylthiocarbazone; C6H5.NH.NH.CS.N:N.C6H5

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 0.10M U B3=32.11
1973BSe (85452) 262

C14H9N7O6 H3L (5044)
1,5-Bis(2-hydroxy-4-nitrophenyl)-3-cyanoformazan;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 0.10M U B(BiH4L2)=53.3
1971BSf (86859) 263

C14H11N5O2 H3L (5046)
1,5-Bis(2-hydroxyphenyl)-3-cyanoformazan; HO.C6H4.N:N.C(CN):N.NH.C6H4.OH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 0.10M U B(BiH4L2)=62.8
1971BSf (87008) 264

C14H12N3OBrS L CAS 39643-68-0 (5097)
1-Benzoyl-4-bromophenylthiosemicarbazide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq 25°C 100% U B3=6.36
1971CFa (87302) 265

Medium: acetone

C14H13N3OS L CAS 14938-70-6 (5090)
1-Benzoyl-4-phenylthiosemicarbazide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	non-aq	25°C	100%	U		B3=7.13	1971CFa (87588)	266

Medium: acetone

C14H13N5OS HL (5394)
1-(2-Pyridylmethylideneamino)-3-(salicylideneamino)thiourea;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	mixed	25°C	40%	U		K1eff=6.54 B2eff=14.60 B3eff=21.70	1985RGa (87613)	267

Medium: 40% DMF, pH 4.5

C14H14N4OBr2 HL CAS 35601-32-2 (5092)
5-(3,5-Dibromo-2-pyridylazo)-2-ethylamino-4-hydroxy-1-methylbenzene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	oth/un	?	?	U		K1=5.46	1966GUa (87685)	268

C14H15N4OBr HL CAS 14337-50-9 (5095)
5-(5-Bromo-2-pyridylazo)-2-ethylamino-4-hydroxy-1-methylbenzene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	oth/un	?	?	U		K1eff=6.04	1966GUa (87764)	269

C14H18N4 L DPEN CAS 4608-34-3 (1850)
N,N'-Bis-(2-pyridylmethyl)-1,2-diaminoethane; (C5H4N.CH2.NH.CH2)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	vlt	NaNO3	25°C	0.10M	C		K1=15.90 B(BiHL)=17.82	1995CCb (88112)	270

Methods: differential pulse polarography and differential pulse voltammetry

C14H22N2O8 H4L CDTA CAS 482-54-2 (200)
trans-1,2-Diaminocyclohexane-N,N,N',N'-tetraethanoic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	NaClO4	25°C	1.0M	U		K1=27.20 K(Bi+HL)=19.11 K(BiL+H)=1.20	1973KIa (88593)	271

Bi+++ EMF NaClO4 20°C 1.0M U 1967BAc (88594) 272
 K(BiL+H)=1.25
 K(BiL+OH)=3.0

Bi+++ sp NaClO4 20°C 0.50M U 1967NKb (88595) 273
 K1=23.8
 K(Bi+HL)=15.7

Bi+++ vlt KNO3 25°C 0.50M U 1966BGa (88596) 274

Bi+++ dis NaClO4 20°C 0.10M U 1963STc (88597) 275
 B(BiL(OH))=34.6

Medium: KClO4

Bi+++ vlt oth/un 20°C 0.10M U 1961SEa (88598) 276

C14H23N3O10 H5L DTPA CAS 67-43-6 (238)
 Diethylenetriamine-pentaethanoic acid; HOOC.CH2.N(CH2.CH2.N(CH2.COOH)2)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt NaClO4 25°C 0.60M U 1987Kta (89164) 277

Bi+++ EMF NaClO4 20°C 1.0M U 1967BAc (89165) 278
 K1=35.6
 K(BiL+H)=2.6
 K(BiL+OH)=2.7

Bi+++ sp NaClO4 20°C 0.50M U 1967NKb (89166) 279
 K1=29.7
 K(Bi+HL)=22.5

Bi+++ gl KNO3 25°C 0.10M U 1964PCa (89167) 280
 K(BiH2L=BiHL+H)=-1.80
 K(BiHL=BiL+H)=-2.40

C14H24N2O8 H4L HMDTA CAS 1633-00-7 (920)
 1,6-Diaminohexane-N,N,N',N'-tetraethanoic acid; ((HOOC.CH2)2N.CH2.CH2.CH2)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp oth/un ? ? U 1971KAa (89566) 281
 K(Bi+H3L)=3.74
 K(Bi+H2L)=5.58

C14H24N2O10 EGTA CAS 67-42-5 (349)
 Ethyleneglycol-0,0'-bis(2-aminoethyl ether)-N,N,N',N'-tetraethanoic acid; H4L

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 20°C 0.50M U 1967NKb (89843) 282
 K1=23.8
 K(Bi+HL)=16.0

C14H32N2O4 L CAS 102-60-3 (2678)
Tetra(2-hydroxypropyl)-N,N,N',N'-diaminoethane; (-CH2.N(CH2.CH(OH).CH3)2)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M C K1=12.0 1995HCb (90742) 283
K(BiL+OH)=12.0

C15H10O6S H2L CAS 17356-57-5 (4058)
Flavonol-2'-sulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaClO4 25°C 0.50M U K1=12.3 B2=20.4 1968YNa (90997) 284
K(Bi+HL=BiL+H)=3.81
K(BiL+HL=BiL2+H)=3.41

C15H11NS HL CAS 15759-12-3 (5689)
2-Phenyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U K1=11.4 B2=19.10 1986UBa (91089) 285
K3=6.2
Medium: dimethylformamide, LiClO4

C15H11NS HL CAS 75955-26-9 (5690)
4-Phenyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U K1=12.8 B2=20.70 1986UBa (91094) 286
B3=6.4
Medium: dimethylformamide, LiClO4

C15H11NS2 HL CAS 100549-76-6 (5692)
5-Thiophenyl-8-mercaptoquinoline;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ EMF non-aq 25°C 100% U K1=13.2 B2=21.30 1986UBa (91100) 287
K3=5.8
Medium: dimethylformamide, LiClO4

C15H15N3OS L (5134)
1-Benzoyl-4-methylphenylthiosemicarbazide; C6H5.CO.NH.NH.CS.NH.C6H4.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq 25°C 100% U 1971CFa (91881) 288

B3=8.60

Medium: acetone

C15H15N3O2S L (5135)
1-Benzoyl-4-methoxyphenylthiosemicarbazide; C6H5.CO.NH.NH.CS.NH.C6H4.OCH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq 25°C 100% U 1971CFa (91889) 289

B3=8.64

Medium: acetone

C15H16N4OBr2 HL CAS 14337-54-3 (993)
2-(3,5-Dibromo-2-pyridylazo)-5-diethylaminophenol;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sol oth/un ? ? U 1966GSa (91940) 290

K(Bi+HL=BiL+H)=5.19

C15H17N4OBr HL CAS 14357-53-2 (712)
2-(5-Bromo-2-pyridylazo)-5-diethylaminophenol; BrC5H3N.N:N.C6H3(OH)N(CH3)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sol oth/un ? ? U 1966GSa (91978) 291

K(Bi+HL=BiL+H)=5.66

C15H17N4OI HL CAS 14493-15-3 (5139)
5-Diethylamino-2-(5-iodo-2-pyridylazo)phenol;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sol oth/un ? ? U 1966GSa (91986) 292

K(Bi+HL=BiL+H)=5.87

C15H18N4O HL CAS 14337-52-1 (5124)
5-Diethylamino-2-(2-pyridylazo)phenol;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sol oth/un ? ? U 1966GSa (92095) 293

K(?)=5.82

C16H17N3O2S L CAS 40027-93-8 (5189)
1-Benzoyl-4-ethoxyphenylthiosemicarbazide; C6H5.CO.NH.NH.CS.NH.C6H4.O.CH2.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp non-aq 25°C 100% U 1971CFa (93746) 294

B3=7.79

Medium: acetone

C18H15N3OS L (5254)

1-Benzoyl-4-(1-naphthyl)thiosemicarbazide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	non-aq	25°C	100%	U			1971CFa (97000)	295

B3=6.28

Medium: acetone

C18H15O3PS HL CAS 16704-71-5 (3365)

3-Diphenylphosphino-benzene sulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	ISE	KNO3	25°C	1.0M	U		K1=3.7 B6=21.8	1962WBa (97106)	296

Medium: HNO3

C18H30N4O12 H6L TTHA CAS 869-52-3 (694)

Triethylenetetraaminehexaethanoic acid;((HOOC.CH2)2N.CH2.CH2.N(CH2.COOH).CH2)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	NaClO4	20°C	0.10M	U			1979NKa (98013)	297

K(Bi+H2L)=22.59
K(Bi+BiO+L)=45.90
K(Bi+BiO+HL)=37.18

Bi+++	sp	NaClO4	25°C	0.50M	U			1979NPa (98014)	298
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K(BiL+H)=3.60
K(BiHL+2H)=4.68
K(BiH3L+H)=1.16
K(BiH4L+5H=Bi+H9L)=5.73

Bi+++	gl	KNO3	25°C	0.10M	U			1969YMa (98015)	299
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K1=17.7
K(BiL+H)=4.16
K(BiHL+H)=2.84
K(BiH2L+H)=2.11

C19H12O8S H4L Pyrogallol red CAS 85531-30-2 (638)

Pyrogallolsulfonephthalein;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Bi+++	sp	KNO3	25°C	?	U	M		1982XXa (98998)	300

K(Bi+L+2CTAB)=15.15

C20H44N4O4 L CAS 102202-74-4 (6041)
1,4,7,10-Tetra-(2-hydroxypropyl)-1,4,7,10-tetraazacyclododecane;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ vlt oth/un 25°C 0.50M U K1=21.25 1998CLb (100925) 301
By differential pulse polarography on pre-equilibrated solutions.
Medium: 0.5 M HNO3.

C21H22N4O HL CAS 56932-30-0 (5308)
1-Hydroxy-2-(2-N-methylanabasiny1-alpha-azo)naphthalene;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp oth/un ? ? U B3=15.70 1966APa (101200) 302

C23H24N4S2 L CAS 53799-78-3 (2613)
4,4'-Dithioantipyrylmethane;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp oth/un 25°C 0.10M U B2=10.18 1979LLa (102686) 303
B3=16.34

Medium: Na2S04

C24H23N9O2 HL (5330)
1,5-Bis(4-antipyriny1)-3-cyanoformazan;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ sp NaCl04 25°C 0.10M U B(BiH2L2)=56.6 1971BSf (102933) 304

C24H31N3O8 H3L CAS 35369-55-2 (6972)
N,N''-Bis(2-hydroxybenzyl)-2,5,8-triazanonane-N,N',N''-triethanoic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Bi+++ gl NaNO3 25°C 0.50M C K1=27.76 1994HCb (103055) 305
K(BiL+H)=8.11
K(BiHL+H)=7.19
K(BiH2L+H)=4.88
K(BiH3L+H)=3.77

By spectrophotometry in 0.5 M NaCl: K(BiL+H)=7.95, K(BiHL+H)=7.0, K(BiH2L+H)=4.60, K(BiL+OH)=3.8.

C26H28N6 L CAS 16858-02-9 (933)
N,N,N',N'-Tetrakis-(2-pyridylmethyl)-diaminoethane;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	vlt	NaNO3	25°C	0.10M	U			K1=19.78	1999CUa (103999)	306

Bi+++	vlt	NaNO3	25°C	0.10M	C			K1=19.75	1995CCb (104000)	307
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Method: Differential pulse polarography

C31H32N2O13S H6L Xylenol orange CAS 63721-85-5 (432)

5,5'-Bis-N,N-bis(carboxymethyl)aminomethyl-4'-hydroxy-3,3'-dimethylfuchstone-2"-sulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	sp	NaClO4	?	1.0M	U				1972KNa (105456)	308

K(Bi+H3L)=9.80

K(Bi+2H3L)=15.53

Bi+++	sp	oth/un	?	?	U				1968KBb (105457)	309
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K(Bi+H2L)=5.13

Bi+++	sp	NaNO3	20?°C	0.20M	U				1963BGa (105458)	310
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B(Bi2L2)=75.6

Bi+++	sp	KNO3	18°C	0.1?M	U				19600Ia (105459)	311
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K(?)=7.0

C37H44N2O13S H6L MeThymol Blue (428)

3,3'-Bis(N,N-di(carboxymethyl)aminomethyl)thymolsulfonephthalein;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	sp	NaClO4	25°C	0.50M	U				1970KNa (106588)	312

K(Bi+H3L)=12.49

B(BiH3L)=44.65

K(BiH3L+H5L)=5.60

Polymer (6896)

Polymaleic acid-methacrylic acid copolymer; (-C4H2O3.CH2.C(CH3)COOH-)n

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Bi+++	dis	NaCl	25°C	0.10M	U				1993KHa (108347)	313

K1eff=9.9

Method: dialysis; pH=8 [Bi]=0.00005 M

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EXPLANATORY NOTES

DATA Flags are :-

- T Data at other TEMPERATURES
- I Data with various BACKGROUNDS
- H Data for THERMOCHEMICAL quantities

M Data for TERNARY Complexes

EVALUATION Flags are :-

T or IUP=T signifies EVALUATION RATING = Tentative by IUPAC

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