

SC-Database

Software version = 5.81 Data version = 4.62

Experiment list contains 254 experiments for

(no ligands specified)

2 metals : Ti<sup>+++</sup>, Ti<sup>++++</sup>

(no references specified)

(no experimental details specified)

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e- HL Electron (442)  
Electron;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti <sup>+++</sup>	oth	oth/un	25°C	0.00	U				1963ORa (962)	1
K(Ti+e=Ti <sup>++</sup> )=-34, -2000 mV										

Ti <sup>+++</sup>	EMF	oth/un	0°C	var	U				1924FHa (963)	2
K(Ti+e=Ti(II))=-6.8(-370 mV)										

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti <sup>+++</sup>	sp	oth/un	25°C	1.61M	U	I		K1=1.61	1975FBa (5788)	3
Ti <sup>+++</sup>	dis	NaClO4	25°C	4.0M	U				1975HKa (5789)	4
K3=0.51 K4=0.33										

Ti <sup>+++</sup>	EMF	non-aq	25°C	100%	U				1971DTb (5790)	5
K3=4.92 K4=2.92										

Medium: SeOCl<sub>2</sub>, 0.5 M Et<sub>4</sub>NClO<sub>4</sub>

Ti <sup>+++</sup>	sp	oth/un	rt	var	U			B2=0.37	1971KGa (5791)	6
K(TiCl <sub>2</sub> +3H+4Cl=H <sub>3</sub> TiCl <sub>6</sub> )=-7.8										

Medium: HCl

Ti <sup>+++</sup>	sp	KCl	25°C	var	U			K1=0.56	1971PLa (5792)	7
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Ti <sup>+++</sup>	sp	oth/un	25°C	0.0	U			K1=-1	1967GAa (5793)	8
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Ti <sup>+++</sup>	ix	NaClO <sub>4</sub>		3.0M	U			K1=0.55 B2=0.15	1967NKe (5794)	9
Metal:TiO <sup>++</sup> . In LiCl var: K3=-1.03, K4=-1.1										

Ti <sup>+++</sup>	sp	oth/un	?	12.0M	U				1957JOb (5795)	10
Medium: HCl. K(Ti(III)Cl <sub>2</sub> +Ti(IV)Cl <sub>6</sub> =Ti <sub>2</sub> Cl <sub>7</sub> (?))=1.08										

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Ti+++ kin NaClO4 40°C 0.50M U K1=0.34 1954DQa (5796) 11  
 \*\*\*\*\*

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

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

Ti+++ ix KCl ? 0.20M U 1966NAb (7255) 12  
 K(TiO+L)=6.65  
 K(TiOL+L)=5.09  
 K(TiOL2+L)=4.58  
 K(TiOL3+L)=4.06

Medium: HCl

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OH- HL Hydroxide (57)  
 Hydroxide;

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

Ti+++ gl KCl 25°C 1.00M C 1988PFa (12272) 13  
 \*K1=-2.59  
 \*B(2,2)=-3.03

Ti+++ vlt KCl 25°C 1.0M U 1983TMb (12273) 14  
 K[Ti(OH)+H]=2.14

Ti+++ sol oth/un 18°C 1.00M U K1=12.30 B2=22.57 1981NMb (12274) 15  
 B3=32.32

Ti+++ nmr oth/un var 1.0M U TI 1978SSd (12275) 16  
 \*K1=-3.9  
 \*K1=-3.7 (I=0.3)  
 \*K1=-3.6 (I=0.1)

Medium: KBr in D2O. Method: esr. 0-60 C. K(Ti(H2O)6=Ti(H2O)5OH+H)=-3.85

Ti+++ kin NaCl 25°C 1.0M C 1977Bmi (12276) 17  
 \*K1=-2.46

Ti+++ kin KCl 25°C 0.50M U I 1973BLc (12277) 18  
 \*K1=-1.4  
 In 0.5 M LiClO4, \*K1=-1.4

Ti+++ kin oth/un 25°C 0.50M U 1973Lba (12278) 19  
 \*K1=-1.9

Medium: LiCl

Ti+++ vlt mixed 25°C U K1=14.0 B2=25.2 1972LIa (12279) 20  
 B3=32.4

Medium: ethylene glycol and HCl varied  
 -----

Ti+++ sp none 25°C 0.00 U 1971PLa (12280) 21  
\*K(Ti+H2O=TiO+2H)=-4.5

Ti+++ gl KCl 25°C 3.00M U 1970KBc (12281) 22  
\*K1=-2.77  
\*B(2,2)=-3.9

Ti+++ gl none 25°C 0.0 U T K1=12.71 1962PFa (12282) 23  
K1=12.94(15 C),12.26(35 C)

Ti+++ gl none ? 0.0 U 1957MOa (12283) 24  
Kso=-53.10

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

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
Ti+++ vlt NaClO4 25°C 1.00M U K1=1.38 B2=1.78 1980TMb (15272) 25

Ti+++ sp oth/un 25°C 1.70M U 1969DIb (15273) 26  
K1=0.18 to 0.7

Ti+++ vlt oth/un 21°C 0.50M U 1958TDa (15274) 27  
K=-0.5(-0.03 mV)

Medium: HCl. K: K(TiOHL+H+e=TiL+H2O)  
\*\*\*\*\*  
SO4-- H2L Sulfate CAS 7664-93-9 (15)

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

Ti+++ ix oth/un 18°C 3.00M U K1=1.4 B2=2.3 1978NMa (16589) 28

Ti+++ sp oth/un 25°C 1.12M U I K1=1.35 1975FBb (16590) 29  
\*\*\*\*\*

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  
Ti+++ sp oth/un 25°C 1.00M U K1=5.93 B2=11.33 1988LOa (19092) 30  
Medium: LiCl

Ti+++ vlt NaNO3 25°C 0.20M U B2=12.11 1980MTb (19093) 31  
K(Ti+HL)=6.69

Ti+++ ix NaClO4 17°C 1.08M U K1=7.15 B2=12.94 1979NMB (19094) 32  
B3=16.54

Medium: LiClO4

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Ti+++      sp  NaCl   10°C  1.0M U      K1=6.45  B2=12.53  1977CDa (19095)  33
-----
Ti+++      sp  KCl    25°C  0.10M U I    B2=8.58          1971PLa (19096)  34
0.2 M, B2=8.47; 0.3 M, B2=8.40; I=0.4, B2=8.33
*****
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
-----
Ti+++      gl  KCl    25°C  1.00M C      K1=9.30          1988PFa (21734)  35
B(TiHL)=11.44
B(TiH-1L)=4.48
*****
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
-----
Ti+++      gl  KCl    25°C  1.00M C      K1=6.83  B2=11.82  1988PFa (24569)  36
K3=2.84
-----
Ti+++      sp  oth/un 15°C  0.50M U      K1=5.46          1986CDa (24570)  37
Medium: LiCl
*****
C3H7NO2          HL   Alanine          CAS 56-41-7 (86)
2-Aminopropanoic acid; H2N.CH(CH3).COOH
-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values          Reference ExptNo
-----
Ti+++      EMF oth/un ? ? U      K1=8.50          1970FMb (26279)  38
*****
C3H7NO2          HL   B-Alanine        CAS 107-95-9 (575)
3-Aminopropanoic acid; H2N.CH2.CH2.COOH
-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values          Reference ExptNo
-----
Ti+++      EMF oth/un ? ? U      K1=9.70          1970FMb (26483)  39
*****
C3H7NO3          HL   Serine           CAS 56-45-1 (49)
2-Amino-3-hydroxypropanoic acid; H2N.CH(CH2.OH)COOH
-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values          Reference ExptNo
-----
Ti+++      EMF oth/un ? ? U      K1=7.60          1970FMb (27186)  40
*****
C3H9O3P          L           CAS 121-45-9 (1786)
Trimethylphosphite; (CH3O)3.P
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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	nmr	non-aq	20°C	100%	U	T HM		1987SEc (28003)	41
K(Ti(2,4-C7H11)2 + L)=2.03									
Data for the reaction of open titanocene [Ti(2,4-C7H11)2] with L at var. T. DH=47.7 kJ mol <sup>-1</sup> , DS=126 J K <sup>-1</sup> mol <sup>-1</sup> . Medium: THF									
*****									
C3H9P		L						CAS 594-09-2	(1732)
Trimethyl phosphine; (CH3)3P									

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	nmr	non-aq	40°C	100%	U	T HM		1987SEc (28057)	42
K(Ti(2,4-C7H11)2 + L)=2.69									
data for the reaction of open titanocene [Ti(2,4-C7H11)2] with L at var. T. DH=60.7 kJ mol <sup>-1</sup> ; DS=143 J K <sup>-1</sup> mol <sup>-1</sup> . Medium: THF									
*****									
C4H6O4		H2L						CAS 516-15-2	(816)
Methylpropanedioic acid; HOOC.CH(CH3).COOH									

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	sp	oth/un	15°C	0.50M	U		K1=5.4	1986CDa (30139)	43
Medium: LiCl									
*****									
C4H8N2O3		HL						CAS 70-47-3	(17)
2-Aminobutanedioic acid 4-amide; H2N.CH(CH2.CO.NH2).COOH									

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	EMF	oth/un	?	?	U		K1=7.20	1970FMb (32734)	44
*****									
C5H5N		L						CAS 110-86-1	(31)
Pyridine, Azine;									

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	vlt	non-aq	127°C	100%	U		K1=2.75	1967LTa (36684)	45
Medium: Fused ethylpyridinium bromide.									
*****									
C5H8O2		HL						CAS 123-54-6	(164)
Pentane-2,4-dione; CH3.CO.CH2.CO.CH3									

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	sp	oth/un	25°C	1.0M	U		K1=10.43 B2=18.82 B3=24.9	1967LBa (38103)	46
*****									
C5H9NO2		HL						CAS 147-85-3	(44)
Pyrrolidine-2-carboxylic acid; C4H8N.COOH									

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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      EMF oth/un  ?      ?  U          K1=10.05      1970FMb (38648)  47
*****
C5H11NO2      HL      Valine          CAS 72-18-4 (43)
2-Amino-3-methylbutanoic acid; H2N.CH(CH(CH3)2)COOH
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      EMF oth/un  ?      ?  U          K1=8.20       1970FMb (40764)  48
*****
C6H5NO2      HL      Picolinic acid  CAS 98-98-6 (391)
2-Pyridine-carboxylic acid; C5H4N.COOH
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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      oth oth/un  25°C  3.00M U          K1=5.62  B2=11.10  1968PGa (42606)  49
B3=16.58
Medium: KBr. Method: coulometric titration
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Ti+++      gl  oth/un  25°C  3.0M U          K1=5.62  B2=11.10  1968PGc (42607)  50
K3=5.48
Medium: KBr
*****
C6H8O7      H3L      Citric acid      CAS 77-92-9 (95)
2-Hydroxypropane-1,2,3-tricarboxylic acid; HOOCCH2.CH(OH)(COOH).CH2COOH
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      sp  oth/un  25°C  1.0M U          K(Ti+2H2L)=4.05  1979SFa (46279)  51
Medium: NaBr
*****
C6H12N2O4      H2L      EDDA          CAS 5657-17-0 (119)
1,2-Diaminoethane-N,N'-diethanoic acid; HOOC.CH2.NH.CH2.CH2.NH.CH2.COOH
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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      gl  KNO3  25°C  0.10M U          K1=8.75  B2=16.39  1962THb (49275)  52
*****
C6H13NO2      HL      Leucine          CAS 61-90-5 (47)
2-Amino-4-methylpentanoic acid; H2N.CH(CH2.CH(CH3)2)COOH
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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      EMF oth/un  25°C  0.10M U          K1=8.50      1970FMb (50113)  53
*****
C6H15O3P      L          CAS 122-52-1 (1723)
Triethylphosphite; (C2H5O)3P
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      nmr non-aq 17°C 100% U T HM                        1987SEc (51514) 54
                                                    K(Ti(2,4-C7H11)2 + L)=2.01
Data for the reaction of open titanocene [Ti(2,4-C7H11)2] with L at var. T.
DH=44.4 kJ mol-1, DS=115 J K-1 mol-1. Medium: THF
*****
C6H15P      L                        CAS 554-70-1 (166)
Triethylphosphine; (C2H5)3P
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      nmr non-aq -4°C 100% U T HM                        1987SEc (51549) 55
                                                    K(Ti(2,4-C7H11)2 + L)=1.09
Data for the reaction of open titanocene [Ti(2,4-C7H11)2] with L at var. T.
DH=41.8 kJ mol-1, DS=135 J K-1 mol-1. Medium: THF
*****
C7H6O3      H2L Salicylic acid CAS 69-72-7 (14)
2-Hydroxybenzoic acid, Salicylic acid; HO.C6H4.COOH
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      sp KCl 20°C 1.00M U M                               1973VGa (54309) 56
                                                    K(TiA2+HL=TiA2L+H)=4.68
                                                    K(TiH2A+H2L=(TiH2A)H2L)=11.7
H2A= 4-(2-pyridylazo)resorcinol
*****
C8H11P      L                        CAS 672-66-2 (2290)
Dimethyl-phenyl-phosphine; (CH3)2.P.C6H5
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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      nmr non-aq 20°C 100% U T HM                        1987SEc (61325) 57
                                                    K(Ti(2,4-C7H11)2 + L)=2.38
Data for the reaction of open titanocene [Ti(2,4-C7H11)2] with L at var. T.
DH=54.0 kJ mol-1; DS=139 J K-1 mol-1. Medium: THF
*****
C10H8N2     L 2,2'-Bipyridyl CAS 366-18-7 (25)
2,2'-Bipyridine; (C5H4N)2
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti+++      sp KCl 50°C 0.50M U                               K1=2.86 B2=4.75 1970TNb (69653) 58
                                                    B3=6.36
-----
Ti+++      con none ? 0.0 U                               K3=25.28 1959KMa (69654) 59
*****
C10H16N2O8  H4L EDTA CAS 60-00-4 (120)
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1,2-Diaminoethane-N,N,N',N'-tetraethanoic acid, Sequestric acid;

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ sp KCl 20°C 1.20M U 1973YPa (74225) 60  
K(Ti+H2L)=7.50

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ vlt NaNO3 25°C 0.10M U T K1=21.3 1954PMb (74226) 61  
K(TiO+L)=17.3

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ vlt oth/un ? 0.10M U K1=17.7 1952BKa (74227) 62  
\*\*\*\*\*  
C12H8N2 L Phenanthroline CAS 66-71-7 (144)  
1,10-Phenanthroline;

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ sp oth/un 20°C ? U K1=3.78 B2=8.29 1969TNa (80522) 63  
B3=12.50  
\*\*\*\*\*  
C20H14N2O5S H3L Solochrome 6B CAS 3564-14-5 (3507)  
1-(1-Hydroxy-2-naphthylazo)-2-naphthol-4-sulfonic acid, Mordant Black3, Eriochrome  
blue-black B;

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ sp oth/un ? 0.10M U K1=3.84 B2=7.82 1972TNa (99665) 64  
\*\*\*\*\*  
C20H16N4O5S H2L EriochromeRed B CAS 14954-75-7 (3510)  
4-(4,5-Dihydro-3-Me-5-oxo-1-Phe-1H-pyrazol-4-ylazo)-3-naphthol-1-sulfonic acid;

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ sp oth/un 20°C 0.20M U 1972TPb (99798) 65  
K(Ti+HL)=6.14, pH=3.5-4.5  
K(Ti+2HL)=14.49  
\*\*\*\*\*  
C23H18O9S H4L Eriochrome cyan CAS 3564-18-9 (433)  
4'-Hydroxy-3,3'-dimethyl-2''-sulfofuchsone-5,5'-dicarboxylic acid;

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti+++ sp oth/un ? ? U K1=5.92 B2=11.60 1973TPb (102637) 66  
By polarography: K1=6.89, B2=10.39  
\*\*\*\*\*  
e- HL Electron (442)  
Electron;

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Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Ti++++ vlt none 25°C 0.0 U 1961SKc (964) 67  
K=-3.5(-209 mV)

K:  $Ti(OHCl)_n + nH + e = Ti(III) + nCl + nH_2O$ , n=1 or 2

Ti++++ EMF oth/un 20°C 5.0M U I 1958BGc (965) 68  
K(Ti+e)=2.58(150 mV)

Medium:H2SO4. K=2.24(I=4;130 mV), 1.86(I=3;108 mV), 1.58(I=2,92 mV).

Data also in HCl: K=4.90(I=10),2.15(I=4) and HBr: K=4.07(I=7),2.96(I=3)

Ti++++ vlt oth/un 21°C 0.50M U M 1958TDa (966) 69  
K=-0.9(-55 mV)

Medium:HCl. K:  $TiOH + H + e = Ti(III) + H_2O$ . K( $TiOHSCN + H + e = TiSCN + H_2O$ )=-0.5(30 mV),

Ti++++ oth none 25°C 0.0 U 1952LAb (967) 70  
K=-60.8(-860 mV)

K( $Ti + 4e = Ti(s)$ )=-60(-880 mV)

K: $TiO_2(s,hydr) + 4H + 4e = Ti(s) + 2H_2O$ . From thermodynamic data

Ti++++ EMF oth/un 18°C 2.0M U 1908DFa (968) 71  
K(Ti+e)=0.95(56 mV)

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

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ vlt none ? 0.0 U 1962KSb (2332) 72  
K( $TiOH + 2Br$ )=1.56

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

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ ISE KNO3 37°C 0.32M U M 1985TMb (5797) 73  
K( $TiA_2Cl + Cl = TiA_2Cl_2$ )=1.38

A=Cyclopentadiene

Ti++++ sol KCl 20°C 3.50M U K1=-0.5 1970GTc (5798) 74  
K=-0.44

K:  $Ti(OH)_4(s) + 3H + 3Cl = TiOHCl_3 + 3H_2$ . \*Kso=-2.3 (3.5 M NaClO4)

Ti++++ sp NaClO4 25°C 5.0M U I K1=0.60 1969VWa (5799) 75  
Medium: HClO4. K1=0.42(I=6), 0(I=7), -0.05(I=7.5), -0.23(I=8)

Ti++++ dis oth/un var U 1968SSe (5800) 76  
Kd( $Ti + 4Cl + 2TBP(benzene)$ )=-1.0

\*\*\*\*\*  
ClO4- HL Perchlorate CAS 7001-90-3 (287)  
Perchlorate;

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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    con oth/un  ?   dil  U                                1961KPd (6381) 77
                                                K(TiOL+L)=1.61
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Ti++++    dis oth/un  ?   ?  U   M                                1955DEa (6382) 78
Kd(TiOH+H+4L=TiL4(CH3COCH2CH(CH3)2))=-3.63
*****
F-                HL   Fluoride                CAS 7644-39-3 (201)
Fluoride;
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    ISE NaClO4 25°C 3.00M U                                1983CPa (7256) 79
                                                K(Ti(OH)2+HF=Ti(OH)2F)=2.28
                                                K(Ti(OH)2+4HF=TiF4)=8.34
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Ti++++    kin NaClO4 25°C 0.50M U                                1977TTa (7257) 80
                                                K(TiO+HL=TiOL+H)>2.30
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Ti++++    ix  oth/un  ?   ?  U                                1972PAb (7258) 81
                                                K6=3.79
-----

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```

Ti++++    kin oth/un 25°C dil  U T                                1972RTa (7259) 82
                                                K(TiF4(OH)+HF+F=TiF6)=5.85
At 0 C: K=6.48
-----

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Ti++++    EMF oth/un  ?   0.50M U                                1967PMa (7260) 83
                                                K6=3.81
Medium: HCl
-----

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Ti++++    EMF NaClO4 25°C 3.0M U                                K1=>5.38 K2=4.35 1960CCa (7261) 84
                                                K3=3.96
                                                K4=3.72
Metal:TiO ?. Method: quinhydrone electrode in HClO4
-----

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Ti++++    sp  KNO3    ?   0.10M U                                1952KLa (7262) 85
                                                K(TiO(?)+L)=6.44
*****
OH-                HL   Hydroxide                (57)
Hydroxide;
-----

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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    nmr NaClO4 25°C 4.0M C                                1987CMd (12284) 86
                                                K(3TiO=(TiO)3OH+H)=0.21
                                                K(3TiO=Ti3O4+2H)=-0.42
                                                K(4TiO=(TiO)4)=0.36
Method: 170 nmr and light scattering data.
-----

```

Ti++++	gl	KNO3	37°C	0.32M	U			1985TMb (12285)	87
								*K(TiA2(H2O)2)=-3.5	
								*K(TiA2(H2O)OH)=-4.35	
A=cyclopentadiene									
Ti++++	EMF	NaCl	25°C	2.0M	U	H		1981EKb (12286)	88
Spectroscopy also used. K(TiO+2H2O=TiO(OH)2(sat.)+2H)=-4.7									
K(TiO(OH)2=TiO(OH)2(solid))=-27.3									
Ti++++	sp	oth/un	25°C	0.60M	U	I	M	1981TMa (12287)	89
K(TiI+S04)=1.28									
Ti++++	gl	NaCl	25°C	2.0M	U			1979EIa (12288)	90
K(8TiO=(TiO)8(OH)12+12H)=-1.68									
Ti++++	sp	KNO3	25°C	0.10M	U	I		K1=14.15 B2=27.88 1971NAe (12289)	91
K3=13.39									
K4=13.06									
K1=14.29, K2=13.89, K3=13.58, K4=13.33(I=0.3); K1=14.40, K2=14.02, K3=13.75, K4=13.45(I=0.5); K1=14.70, K2=14.32, K3=14.05, K4=13.74(I=1)									
Ti++++	sol	NaClO4	20°C	3.50M	U			1970GTc (12290)	92
Kso(Ti(OH)4)=-58.3									
Ti++++	sol	KCl	20°C	3.50M	U			1970GTc (12291)	93
K(Ti(OH)4(s)=Ti(OH)2)=-30.4									
Ti++++	gl	KCl	?	0.10M	U			1970MMk (12292)	94
*K1=-2.53									
*K2=-4.58									
*K3=-8.7									
*K4=-14.3									
*K5=-21.5, *K6=-30.0. *Kn: Ti2O5 + nH2O=Ti2O5(OH)n + nH									
Ti++++	dis	NaClO4	25°C	1.00M	U			1969LSd (12293)	95
B4=53.3									
Ti++++	gl	oth/un	25°C	3.00M	U			1968PGc (12294)	96
*B(2,2)=-3.3									
*K1=-2.25									
Medium: KBr									
Ti++++	sol	NaClO4	18°C	0.0	U	I		K1=18.0 B2=35.20 1964NLa (12295)	97
K3=12.5									
K4=11.0									
I=0 corr. In 0.1 M NaClO4: K(TiO2(s)+2H2O=Ti(OH)4)=-5.5									
Ti++++	dis	NaClO4	25°C	0.10M	U			1963LCb (12296)	98
*K2=-1.8									

\*K3=-2.4  
\*K4=-2.1

-----  
Ti++++ sol oth/un 25°C 0.1?M U 1963LCb (12297) 99  
K(Ti(OH)4(s)=TiOH+3OH)=-39.4  
-----

Ti++++ sol none 25°C 0.0 U 1962BGa (12298) 100  
K(TiO(OH)2(s)=TiO+2OH)=-29.0  
-----

Ti++++ sol none 25°C 0.0 U 1962BGa (12299) 101  
K(TiO+OH=TiO(OH))=12.5  
K(TiO(OH)2(s)=TiOOH+H)=-16.5  
-----

Ti++++ ix oth/un 18°C var U 1962NAd (12300) 102  
K(TiO+H2O=TiO(OH)+H)=-1.3  
K(TiO+OH=TiO(OH))=12.8  
-----

Ti++++ ix NaClO4 25°C var U 1960BHc (12301) 103  
\*K3=-0.3  
-----

Ti++++ dis NaClO4 25°C 2.0M U 1960GAa (12302) 104  
\*B2=-1.1  
\*B2: K(TiO+3H2O=Ti(OH)4+2H)  
-----

Ti++++ oth oth/un 0°C 12.0M U 1957MTa (12303) 105  
\*B4=-1.57(?)  
Medium:12-17 M HCl. Method:partial pressure of HCl  
-----

Ti++++ oth none 25°C 0.0 U 1952LAb (12304) 106  
K(TiO(OH)2(s)=TiO+2OH)=ca.-29  
-----

method:combination of thermodynamic data  
\*\*\*\*\*  
O2-- H2L Peroxide CAS 7772-84-1 (2813)  
Peroxide; -0.0-  
-----

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	sp	NaClO4	25°C	1.00M	U	TI			1984THa (12706)	107
								K(TiO+H2O2=TiO2+H2O)=3.94		

-----

Ti++++	sp	oth/un	25°C	2.0M	U	M		K1=4.13	1975MTb (12707)	108
--------	----	--------	------	------	---	---	--	---------	-----------------	-----

-----

Ti++++	sp	NaClO4	25°C	5.46M	U	TI			1968VWa (12708)	109
								K(TiO+H2L)=4.17		

K=4.01(I=3.23), 3.94(I=2.11), 3.86(I=1.00). In 1 M HClO4: K=4.42(5 C); 4.15(15 C); 3.87(25 C); 3.55(40 C). Also at I=0 corr  
-----

Ti++++	sp	none	25°C	0.0	U	H			1967VWa (12709)	110
								K(TiO+H2L)=3.71		

DH=-43.9 kJ mol-1, DS=-75.7 J K-1 mol-1

-----  
Ti++++ sp oth/un ? var U 1966BVc (12710) 111  
K(TiOHL+H)=-2  
K(TiO+HL)=13.85  
-----

Ti++++ kin oth/un 18°C 0.30M U 1966LIa (12711) 112  
K(TiO+HL)=12.29  
-----

Ti++++ sp oth/un ? var U 1964JPa (12712) 113  
K(TiOC2O4+H2L)=6.15  
-----

Ti++++ sp oth/un ? 1.50M U M 1963PJa (12713) 114  
K(TiOSO4+H2L=TiLSO4+H2O)=4.2  
-----

Ti++++ sp oth/un ? ? U 1961VIb (12714) 115  
K(TiO+H2L)=4.31  
-----

Ti++++ sp oth/un ? ? U M 1961VIb (12715) 116  
K(TiOH2L+2H+A=TiH2LA)=24.82  
-----

H4A=EDTA

-----  
Ti++++ sp NaClO4 25°C 3.0M U M 1960CLa (12716) 117  
K(TiO+H2L)=3.51  
K(TiOF+H2L)=4.22  
-----

Ti++++ dis NaClO4 25°C 1.0M U 1960GAa (12717) 118  
K(TiO+H2L)=3.9  
K(TiO+2H2L)=6.3  
-----

Ti++++ sp oth/un rt var U M 1957MOB (12718) 119  
K(TiOA+H2L=TiAL+H2O)=6.37  
K(TiOH2L+A=TiAL+H2O)=20.43  
-----

H4A=EDTA

-----  
Ti++++ sp oth/un rt var U 1954GAa (12719) 120  
K(TiO+H2L)=4.27  
-----

Ti++++ sp oth/un 20°C var U 1951BVA (12720) 121  
K(TiO+H2L)=4.05  
-----

Medium: HCl

-----  
Ti++++ sp oth/un 20°C 30% U 1948STa (12721) 122  
K(TiO+H2L)=5.05  
-----

Medium:H2SO4.

-----  
Ti++++ sp oth/un 20°C var U 1937RUa (12722) 123  
K(Ti(OH)6(?)+H2L)=3.95  
-----

\*\*\*\*\*

PO4--- H3L Phosphate CAS 7664-38-2 (176)

Phosphate;

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ vlt oth/un 25°C ? U 1982KNb (13345) 124  
pKa(Ti(H2PO4)6)=18.29 (?)  
pKa(Ti(H2PO4)3)=10.37 (?)  
-----

Ti++++ EMF NaCl 25°C 2.0M U H 1981EKb (13346) 125  
K(TiO+HL)=4.48  
Ks(TiOHL)=-114.8  
-----

Ti++++ sol oth/un 20°C 0.50M U I 1970GSh (13347) 126  
K(TiO+HL)=10.15  
K(TiOHL(H2O)x(s)+2H=TiO+H3L)=-5.19 or -6.3 depending on form  
At I=0 corr: Ks=-14.2 or -15.3  
-----

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

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

Ti++++ sp NaClO4 25°C 0.10M U I T K1=0.45 1980MTa (15275) 127  
-----

Ti++++ sp NaClO4 25°C 0.50M U T 1977TTa (15276) 128  
K(TiO+L)=0.52  
In LiClO4. By kinetic methods, K(TiO+L)=0.49  
-----

Ti++++ vlt oth/un 25°C 0.40M C 1977VPb (15277) 129  
K(TiOH+SCN)=1.65  
Method: cyclic chronopotentiometry. Medium: 0.40 M SCN-.  
-----

Ti++++ sp non-aq ? 100% U I K1=2.31 B2=4.33 1973SMd (15278) 130  
B3=6.25  
B4=8.15  
B5=10.05  
B6=11.94  
Medium:acetone. In DMF: K1=3.20,B2=6.25,B3=9.15,B4=11.91,B5=14.61,B6=17.26  
-----

Ti++++ dis non-aq ? 100% U 1955DEa (15279) 131  
Kd=1.92  
Kd: K(TiOH+H+4L=TiL4(Me-i-Bu-ketone)+H2O)  
-----

Ti++++ sp NaClO4 ? 1.0M U 1953DEa (15280) 132  
K(TiOH+L)=1.7  
-----

\*\*\*\*\*  
SO4-- H2L Sulfate CAS 7664-93-9 (15)  
Sulfate;  
-----

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

Ti++++ dis oth/un 20°C 8.0M U 1969BMg (16591) 133  
 K(TiO+L)=2.23  
 K(TiO+2L)=4.11  
 B3=11.42

Medium: H2SO4

Ti++++ sp NaClO4 25°C 4.0M U I 1969VWa (16592) 134  
 K(TiO+L)=2.26  
 K(TiO+2L)=3.80

Medium: HClO4; K1=2.15(I=3), 2.47(I=5) 2.52(I=0)

Ti++++ sp oth/un 26°C 1.30M U T 1966GSg (16593) 135  
 B(TiCr complex)=1.5

B(TiFe complex)=1.4 complexes not defined

Ti++++ ix oth/un 18°C var U K1=2.40 1962NAe (16594) 136

Ti++++ ix oth/un ? var U 1960BHc (16595) 137  
 K(Ti(OH)2+HL)=-0.19  
 K(Ti(OH)3+HL)=1.05

Medium: H2SO4

\*\*\*\*\*

CH4O L Methyl alcohol CAS 67-56-1 (597)  
 Methanol; CH3.OH

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

Ti++++ EMF alc/w 20°C 100% U 1971GSa (17908) 138  
 K(Ti+2L=Ti(H-1L)2+2H) > 1  
 K(Te(H-1L)2+H-1L)=12.82  
 K(3TiL'3+2L'=Ti3L'11)=27.47  
 K(Ti3L'11+L'=Ti3L'12)=9.72

Medium: MeOH, 1 M Me4NCl. K(2Ti3L'12+3L'=3Ti2L'9)=13.84. L'=H-1L (i.e.CH3O)

Ti++++ EMF alc/w 20°C 100% U 1964GUa (17909) 139  
 K(Ti2(H-1L)8+H-1L)=11.3

Method: H electrode. Medium: MeOH, 1.0 M Me4NCl

\*\*\*\*\*

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

Ti++++ vlt NaNO3 25°C 0.20M U K1=6.26 B2=10.78 1980MTb (19097) 140  
 K(Ti+2HL)=5.69

Ti++++ vlt NaClO4 25°C 1.00M U K1=5.18 1979TGa (19098) 141

Ti++++ gl NaClO4 25°C 0.50M U 1977VWa (19099) 142  
 K(Ti(OH)2+L)=7.90

K(Ti(OH)2+2L)=13.2

-----  
Ti++++ ix oth/un ? ? U K1=6.51 B2=11.97 1967MNa (19100) 143  
Metal ion: TiO++

-----  
Ti++++ dis NaClO4 20°C 0.10M U 1963STc (19101) 144  
K(TiO+2L)=10.7

-----  
Ti++++ gl oth/un 25°C 0.03M U 1960GSa (19102) 145  
K(TiO+L)=9.7  
K(TiOL+L)=5.11

By HgC204: K(TiOL+L)=4.4

-----  
Ti++++ sp NaClO4 ? 0.02M U 1959BDa (19103) 146  
K(TiO+L)=6.6  
K(TiOL+L)=3.3

Medium: HClO4

-----  
Ti++++ sp oth/un ? ? U K1=6.60 B2=9.90 1959BDd (19104) 147

-----  
Ti++++ con oth/un ? ? U K1=2.67 1959BSb (19105) 148

-----  
Ti++++ oth oth/un ? ? U K1=1.35 1956KPa (19106) 149  
\*\*\*\*\*  
C2H8N2 L Ethylenediamine CAS 107-15-7 (23)  
1,2-Diaminoethane; H2N.CH2.CH2.NH2

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ oth non-aq ? 100% U I M 1962BBa (23236) 150

K(TiA4+L)=2.8

Method: freezing point. Medium: benzene. HA=isopropyl alcohol

In cyclohexane: K(TiA4+L)=3.7, K(TiA4L+TiA4)=-5.3

-----  
C3H6O3 HL L-Lactic acid CAS 79-33-4 (82)  
L-2-Hydroxypropanoic acid; CH3.CH(OH).COOH

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp NaCl ? 0.30M U 1971ZPa (25555) 151

K(Ti(OH)3+2L)=8.61 at pH 4

-----  
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  
-----  
Ti++++ sp oth/un 20°C 0.30M U M 1970ZHa (30740) 152

K(Ti(OH)3+L)=6.74



Ti++++ dis oth/un 25°C 0.10M U 1968GPc (30741) 153  
K(TiO+L)=6.81

\*\*\*\*\*  
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  
-----

Ti++++ ix NaClO4 ? 2.00M U 1973ZGc (31374) 154  
K(TiO+HL)=2.50  
K(TiOHL+HL)=2.12

-----  
Ti++++ dis NaClO4 20°C 0.10M U 1963STc (31375) 155  
K(TiO+2L)=9.7

\*\*\*\*\*  
C5H5N L Pyridine CAS 110-86-1 (31)  
Pyridine, Azine;

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

Ti++++ oth none 25°C 0.0 U HM 1958ERb (36685) 156  
DG(TiF4(s)+2L(g)=TiF4L2(s))=-24.2 kJ mol<sup>-1</sup>, DH=-46, DS=-75. Data also for  
TiCl4, TiBr4 and TiI4

\*\*\*\*\*  
C5H8O2 HL Acetylacetone CAS 123-54-6 (164)  
Pentane-2,4-dione; CH3.CO.CH2.CO.CH3

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

Ti++++ EMF alc/w 20°C 100% U M 1971GSa (38104) 157  
K(TiA2L+A)=11.25  
K(2TiA3L+3A=Ti2A9+2L)=8.80  
K(TiAL2+A)=11.90  
K(TiAL2+TiA2L2=Ti2A3L4)=1.95

Medium: MeOH. HA=CH3OH

K(TiA2L2+A=TiA3L+L)=1.35, K(2TiA2L2+5A=Ti2A9+4L)=11.50

\*\*\*\*\*  
C6H6N2O2 HL Cupferron CAS 135-20-6 (637)  
N-Nitrosophenylhydroxylamine; C6H5.N(OH).NO

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

Ti++++ dis NaClO4 10°C 3.00M U K1=10.39 B2=20.46 1969A1c (43426) 158  
K3=9.75  
K4=9.43

\*\*\*\*\*  
C6H6O HL Phenol CAS 108-95-2 (457)  
Hydroxybenzene, phenol; C6H5.OH

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

-----  
Ti++++ sp oth/un 25°C 0.02M U M 1981VMa (43546) 159  
K(TiO<sub>2</sub>+2HL=TiOAL<sub>2</sub>+HA+H)=-1.66

H<sub>2</sub>A=oxalic acid

\*\*\*\*\*

C<sub>6</sub>H<sub>6</sub>O<sub>2</sub> H<sub>2</sub>L Catechol CAS 120-80-9 (534)  
1,2-Dihydroxybenzene, pyrocatechol; HO.C<sub>6</sub>H<sub>4</sub>.OH

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

-----  
Ti++++ sp oth/un ? 70% U I 1973SPd (43845) 160  
K(TiO+HL)=1.85

Medium: H<sub>2</sub>SO<sub>4</sub>. In 95% H<sub>2</sub>SO<sub>4</sub>, K(TiO+HL)=2.56, K(TiO+2HL)=4.75

-----  
Ti++++ EMF R4N.X 20°C 1.00M U M 1971GSa (43846) 161  
K(TiA<sub>2</sub>+H<sub>2</sub>L+2A=TiA<sub>2</sub>L+2HA)=27.35  
K(2TiA<sub>2</sub>L+A)=13.80

Medium: MeOH, 1.0 M Me<sub>4</sub>NCl. HA=MeOH  
K(Ti<sub>2</sub>A<sub>5</sub>L<sub>2</sub>+4H<sub>2</sub>L+3A=2TiL<sub>3</sub>+8HA)=34.11

-----  
Ti++++ sp oth/un ? 1.20M U I M B<sub>2</sub>=50.1 1970PLd (43847) 162

Medium: 1.2 M H<sub>2</sub>L; Medium: 0.5 M HCl; B(TiAL<sub>2</sub>)=59.4;  
Medium: unknown; K(Ti(OH)<sub>2</sub>+A+L)=29.3, H<sub>2</sub>A=oxalic acid

-----  
Ti++++ sp alc/w 20°C 100% U I 1966SCe (43848) 163  
K(TiO+HL)=6.1

Medium: MeOH. K=4.2(0%), 4.7(25%), 5.1(50%), 5.5(75%). In EtOH/H<sub>2</sub>O:  
K=4.56(25%), 4.98(50%), 5.17(75%), 6.15(100%)

-----  
Ti++++ sp mixed 20°C 100% U I 1966SCe (43849) 164  
K(TiO+HL)=6.39

Medium: propanol. K=4.36(25%), 4.64(50%), 5.07(75%). In 2-propanol:  
K=4.28(25%), 4.73(50%), 4.9(75%), 6.75(100%)

-----  
Ti++++ sp NaClO<sub>4</sub> 20°C 0.10M U 1963SOa (43850) 165  
K(TiO+2H<sub>2</sub>L=TiO(HL)<sub>2</sub>+2H)=-1.9

K(TiO(HL)<sub>2</sub>+H<sub>2</sub>L=TiL<sub>3</sub>+2H)=-4.7  
K(TiO+2H+3L)=61.6

-----  
Ti++++ sp oth/un 22°C 0.50M U 1961SKa (43851) 166  
K(TiO+L)=22.5

K(TiOL+L)=15.9

Medium: acetate buffer. At I=0.05 M: K(TiO+L)=18.8, K(TiOL+L)=17.7

\*\*\*\*\*

C<sub>6</sub>H<sub>6</sub>O<sub>3</sub> H<sub>3</sub>L Pyrogallol CAS 87-66-1 (696)  
1,2,3-Trihydroxybenzene; C<sub>6</sub>H<sub>3</sub>(OH)<sub>3</sub>

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

-----  
Ti++++ sp oth/un 23°C 96% U 1981BMe (43985) 167

K(Ti+H3L)=2.13

Medium: 96% H2SO4

Ti++++ sp oth/un ? 95% U 1973SPd (43986) 168

K(TiO+H3L)=1.49

Medium: H2SO4

Ti++++ sp alc/w 20°C 100% U I 1966SCe (43987) 169

K(TiO+H2L)=6.2

Medium: 100% MeOH. K=4.5(0%), 5.1(25%), 5.4(50%), 5.8(75%). 18-20 C

In EtOH: K=4.8(25%), 5.7(50%), 6.0(75%), 6.4(100%)

Ti++++ sp mixed 20°C 100% U I 1966SCe (43988) 170

K(TiO+H2L)=6.6

Medium: 100% propanol. K=4.6(25%), 4.8(50%), 5.6(75%). 18-22 C

In 2-propanol: K=4.7(25%), 4.7(50%), 5.6(75%), 6.8(100%)

\*\*\*\*\*  
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

Ti++++ sp NaClO4 20°C 0.10M U 1963SOa (44502) 171

K(TiO+2H2L=TiO(HL)2+2H)=-0.3

K(TiO(HL)2+H2L=TiL3+2H)=-2.9

K(TiO+2H+3L=TiL3)=57.6

\*\*\*\*\*  
C6H7N L Aniline CAS 62-53-3 (583)  
Aminobenzene, aniline; C6H5.NH2

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

Ti++++ dis oth/un ? ? U M 1972BAC (44882) 172

K(TiA3+2HL)=0.27

H2A=pyrocatechol. pH 3-4

\*\*\*\*\*  
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

Ti++++ sp NaClO4 20°C 0.10M U 1963SOB (45662) 173

K(TiO+2HL)=24.8

K(TiO+H2L)=3.1

K(TiO+2H2L)=6.25

K(TiO+2H+3HL)=39.3

\*\*\*\*\*  
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
Ti++++	vlt	NaClO4	25°C	0.50M	U				1978TGa (46280)	174
								K(Ti+H3L)=2.98		

Ti++++	ix	NaClO4	?	2.00M	U				1973ZGc (46281)	175
								K(TiO+H2L)=2.91		
								K(TiOH2L+H2L)=2.49		

Ti++++	sp	NaCl	?	0.30M	U				1971ZHa (46282)	176
								K(Ti(OH)2+L+HL)=16.28		

\*\*\*\*\*

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
Ti++++	dis	NaClO4	20°C	0.10M	U				1963STc (47053)	177
								K(TiO+L)=12.3		

\*\*\*\*\*

C6H12O7                      HL      Gluconic acid      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
Ti++++	sp	oth/un	25°C	dil	U	I			1969Mca (49766)	178
								Keff(TiO+L)=4.66    pH 3		
								Keff(TiO+L)=4.43    pH 6		

\*\*\*\*\*

C7H6O3                      H2L      Salicylic acid      CAS 69-72-7 (14)

2-Hydroxybenzoic acid, Salicylic acid; HO.C6H4.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	cal	NaClO4	25°C	0.50M	U				1981VVb (54310)	179
								DH(TiO+L)=-51.4 kJ mol-1		
								for 0.1 M NaClO4 DH1=-46.4 kJ/mol (25 C); -47.7 kJ/mol (15 C);		
								-46.9 kJ/mol (30 C)		

Ti++++	sp	oth/un	20°C	0.10M	U	I			1962BVb (54311)	180
								K(TiO+L)=15.66		
								K(TiO+2L)=24.36		
								In 2-3 M KNO3: K(TiO+2L)=24.63		

Ti++++	sp	oth/un	35°C	?	U			K1=6.09	1959DGd (54312)	181

\*\*\*\*\*

C7H6O4                      H3L      Resorcylic acid      CAS 89-86-1 (876)

2,4-Dihydroxybenzoic acid, b-Resorcylic acid; C6H3(OH)2.COOH

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

-----  
Ti++++ sp oth/un ? 0.10M U 1972AKc (54543) 182  
K(Ti(OH)3+2H2L)=6.48  
-----

Ti++++ sp oth/un ? ? U 1970AKb (54544) 183  
K(TiO+2H2L)=6.01  
-----

\*\*\*\*\*  
C7H6O4 H3L Protocatechuic CAS 99-50-3 (875)  
3,4-Dihydroxybenzoic acid; C6H3(OH)2.COOH  
-----

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

Ti++++ sp NaClO4 20°C 0.10M U 1963SOa (54703) 184  
K(TiO+2H3L=TiO(H2L)2+2H)=-1.35  
K(TiO(H2L)2+H3L=TiL3+5H)=-3.9  
K(TiO+2H+3L)=58.6  
-----

\*\*\*\*\*  
C7H6O5 H4L CAS 610-02-6 (3725)  
2,3,4-Trihydroxybenzoic acid; (HO)3.C6H2.COOH  
-----

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

Ti++++ sp mixed ? 70% U I 1972SPb (54722) 185  
K(TiO+H4L)=2.82  
Medium: 70% H2SO4. In 95% H2SO4, K=2.44  
-----

Ti++++ sp oth/un 18°C 0.10M U 1971AKe (54723) 186  
K(Ti(OH)3+H2L)=3.54  
K(Ti(OH)3+2HL)=7.61  
K(Ti(OH)3+H2L): dil HCl; K(Ti(OH)3+2HL): pH=2.8-7.5  
-----

\*\*\*\*\*  
C7H6O5 H4L Gallic acid CAS 149-91-7 (446)  
3,4,5-Trihydroxybenzoic acid; C6H2(OH)3.COOH  
-----

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

Ti++++ sp mixed ? 95% U 1972SPb (54766) 187  
K(TiO+H4L)=2.35  
Medium: 95% H2SO4  
-----

\*\*\*\*\*  
C7H6O6S H3L CAS 585-42-2 (6136)  
2-Hydroxy-4-sulphobenzoic acid, 4-sulfosalicylic acid; HO.C6H3(COOH)(HSO3)  
-----

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

Ti++++ vlt NaClO4 21°C 0.10M U I 1977UBa (54805) 188  
K(TiO+HL=Ti(OH)L)=4.1  
In 0.6 M NaClO4: K(Ti(OH)L2+HL=TiL3+H2O)=1.7  
-----

\*\*\*\*\*  
C7H6O6S H3L CAS 5965-83-3 (399)  
-----

5-Sulfosalicylic acid, 2-Hydroxy-5-sulfobenzoic; H03S.C6H3(OH).COOH

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp KCl 20°C 1.0M U M 1973VGa (55056) 189  
K(TiA2+HL=TiA2L+H)=3.44  
K(TiH2A+H2L=(TiH2A)H2L)=11.40

H2A=4-(2-pyridylazo)-resorcinol

-----  
Ti++++ sp oth/un 20°C 0.10M U 1963S0a (55057) 190  
K(TiO+2H+3L)=42.2  
K(TiO+2HL)=5.4  
K(TiO+HL)=3.1

\*\*\*\*\*  
C7H7NO2 H2L Salicylaldehyde oxime; HO.C6H4.CH:N.OH CAS 94-67-7 (1486)

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ gl KCl 25°C 0.10M U I K1=16.30 B2=31.15 1968MDe (55314) 191  
K1=18.5(I=0),18.29(I=0.01),17.74(I=0.025),17.35(I=0.05),16.86(I=0.075);  
K2=17.2(I=0),16.88(I=0.01),16.62(I=0.025),16.07(I=0.05),15.66(I=0.075)

\*\*\*\*\*  
C7H8O2 HL CAS 150-19-6 (4412)  
5-Methoxyphenol; HO.C6H4.OCH3

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp mixed ? 90% U 1973SPd (56097) 192  
K(TiO+HL)=1.92

Medium: 90% H2SO4

\*\*\*\*\*  
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  
-----  
Ti++++ dis NaClO4 25°C 1.0M U K1=7.87 B2=15.52 1969LSe (58686) 193  
K3=7.45  
K4=7.23

\*\*\*\*\*  
C9H6O4 H2L Esculetin CAS 305-01-1 (3853)  
6,7-Dihydroxycoumarin;

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp alc/w 20°C 20% U 1964JSb (63954) 194  
K(?)=8.8

Medium: 20% EtOH, 0.4 M NaClO4

\*\*\*\*\*

C9H7NO HL Oxine CAS 148-24-3 (504)  
8-Hydroxyquinoline (8-quinolinol);

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ dis NaClO4 20°C 1.0M U K1=13.22 B2=25.94 1967SLa (64359) 195  
K3=12.26  
K4=11.0

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

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp alc/w 25°C 50% U 1967NPb (64729) 196  
K(TiO+HL)=13

Medium: 50% MeOH, 0.1 M NaClO4

\*\*\*\*\*  
C9H10O2 L 4-Tolyl-acetate CAS 140-39-6 (3857)  
Ethanoic acid 4-methylphenyl ester; CH3.CO.O.C6H4.CH3

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp non-aq 60°C 100% U T H 1966GSd (65382) 197  
K(TiCl4+L)=1.93

Medium: 1,2-dichloroethane. K=2.60(25 C). DH=-37.6 kJ mol<sup>-1</sup>, DS=-71 J K<sup>-1</sup>m<sup>-1</sup>

\*\*\*\*\*  
C10H6O8Br2S2 H4L CAS 58425-38-0 (2003)  
2,7-Dibromo-1,8-dihydroxy-naphthalene-3,6-disulfonic acid;

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp NaClO4 20°C 0.10M U 1975MDa (68535) 198  
B(Ti(OH)2(HL)2)=10.98

\*\*\*\*\*  
C10H6O8Cl2S2 H4L CAS 6155-33-5 (4761)  
2,7-Dichlorochromotropic acid;

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp NaClO4 20°C 0.50M U 19700Mb (68537) 199  
K(TiO+2HL)=7.38

\*\*\*\*\*  
C10H8O2 H2L CAS 569-42-6 (4699)  
1,8-Dihydroxynaphthalene;

-----  
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp oth/un 25°C 0.10M U 1968BNc (69754) 200  
K(Ti(OH)2+2H2L=Ti(OH)2(HL)2+2H)=15.34

$K(\text{Ti}(\text{OH})_3+3\text{H}_2\text{L}=\text{Ti}(\text{OH})(\text{HL})_3+\text{H})=28.0$

-----  
Ti++++ sp non-aq ? 100% U I 1966SCa (69755) 201  
K(TiOH+HL=TiOHL+H)=7.0:acetone  
K=6.38: in dimethylformamide  
K=6.08: in dioxan  
K=6.33: in ethanol

K=6.10 in methanol, K=6.52 in propanol, K=6.85 in 2-propanol

\*\*\*\*\*  
C10H8O4 H2L 4-Me-Esculetin CAS 529-84-0 (3890)  
4-Methyl-6,7-dihydroxycoumarin  
-----

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp alc/w 20°C 20% U 1964JSb (69791) 202  
B3=10.7

Medium: 20% EtOH, 0.4 M NaClO4

\*\*\*\*\*  
C10H8O4 H2L 4-Me-daphnetin CAS 2107-77-9 (6317)  
7,8-Dihydroxy-4-methylcoumarin;  
-----

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp alc/w ? 50% U 1976SSe (69792) 203  
K(TiO+HL)=8.37  
K(TiOHL+HL)=7.33  
K(TiO(HL)2+HL)=5.70

\*\*\*\*\*  
C10H8O5S H3L DHNSA (877)  
2,3-Dihydroxynaphthalene-6-sulfonic acid;  
-----

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ gl oth/un 20°C 0.10M U 1963SOb (69865) 204  
K(TiO+2L)=38.1  
K(TiO+3L)=54.7  
K(TiO+2H+3L)=56.5  
K(TiO+2H2L=TiO(HL)2+2H)=-0.69

\*\*\*\*\*  
C10H8O8S2 H4L Chromotropic ac CAS 148-25-4 (1875)  
1,8-Dihydroxynaphthalene-3,6-disulfonic acid;  
-----

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp NaClO4 25°C 0.10M U 1975BUb (69972) 205  
K1eff=7.72 at pH 5.32  
B2eff=11.85 at pH 5.32  
B(2,2)eff=16.11 at pH 5.32

-----  
Ti++++ sp oth/un 25°C 0.10M U 1968BNc (69973) 206



$K(\text{Ti}(\text{OH})_2+2\text{H}_2\text{L}=\text{Ti}(\text{OH})_2(\text{HL})_2+2\text{H})=14.36$

$K(\text{Ti}(\text{OH})_3+3\text{H}_2\text{L}=\text{Ti}(\text{OH})(\text{HL})_3+\text{H})=25.92$

-----  
Ti++++ sp mixed 20°C 100% U I 1966CSb (69974) 207

$K(\text{TiO}+\text{HL})=7.34$

$K(\text{TiO}+2\text{HL})=12.17$

Medium: DMF/H<sub>2</sub>O, TiO 0.005 M: K<sub>1</sub>=4.80(0% DMF), 5.60(25%), 6.26(50%-74%);

With 0.0025 TiO:K<sub>1</sub>=5.05(0%), 5.57(25%), 6.12(50%), 6.57(74%), 7.38(100%)

-----  
Ti++++ sp NaClO<sub>4</sub> 20°C 0.10M U 1963SOa (69975) 208

$K(\text{TiO}+2\text{L})=40.5$

$K(\text{TiO}+3\text{L})=56.4$

$K(\text{TiO}+2\text{H}+3\text{L}=\text{TiL}_3)=60.5$

$K(\text{TiOL}_2+2\text{H}=\text{TiO}(\text{HL})_2)=4.4$

-----  
Ti++++ sp oth/un 20°C 0.10M U B<sub>2</sub>=6.18 1959SOc (69976) 209

B<sub>3</sub>=10.59

-----  
Ti++++ sp oth/un 20°C 0.10M U 1957BPc (69977) 210

$K(\text{Ti}+\text{H}_2\text{L})=3.99$

\*\*\*\*\*  
C10H12O2 HL CAS 1946-74-3 (202)

3-Isopropyltropolone;

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

-----  
Ti++++ sp alc/w 25°C 50% U B<sub>2</sub>=21.17 1961HSa (71609) 211

B<sub>3</sub>=28.95

Medium: 50% EtOH, 0.01 M

\*\*\*\*\*  
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

-----  
Ti++++ vlt KNO<sub>3</sub> 25°C 0.20M U K<sub>1</sub>=22.61 1986ZFa (74228) 212

-----  
Ti++++ gl KNO<sub>3</sub> 25°C 0.10M C T H K<sub>1</sub>=18.47 1985HWc (74229) 213

Data for 5-35 C. Metal is TiO<sup>++</sup>. Method: Hg and glass electrodes, competition with Hg<sup>++</sup>. DH(K<sub>1</sub>)=-31.3 kJ mol<sup>-1</sup>, DS(K<sub>1</sub>)=250 J K<sup>-1</sup> mol<sup>-1</sup>.

-----  
Ti++++ sp NaClO<sub>4</sub> 20°C 1.0M U 1971KNa (74230) 214

$K(\text{TiO}+\text{L})=18.15$

$K(\text{TiO}+\text{HL})=12.08$

-----  
Ti++++ dis NaClO<sub>4</sub> 20°C 0.10M U T 1963STc (74231) 215

$K(\text{TiO}+\text{L})=17.5$

\*\*\*\*\*  
C11H9N3O2 H2L PAR CAS 1141-59-9 (636)

4-(2'-Pyridylazo)-1,3-dihydroxybenzene; C<sub>5</sub>H<sub>4</sub>N.N:N.C<sub>6</sub>H<sub>3</sub>(OH)<sub>2</sub>

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

Ti++++ sp oth/un 20°C 1.00M U 1974LKd (77587) 216  
K(Ti(OH)2+HL+A=Ti(OH)2HLA)=2.72(HA=ethanoic acid); 21.12(HA=chloroethanoic acid); 20.08(HA=dichloroethanoic acid); 19.74(HA=trichloroethanoic acid)  
-----

Ti++++ sp oth/un 20°C 1.00M U 1974LKd (77588) 217  
B(TiL2A2)=47.43(HA=ethanoic acid); 46.68(HA=chloroethanoic acid); 45.81(HA=dichloroethanoic acid); 45.45(HA=trichloroethanoic acid)  
-----

Ti++++ sp oth/un ? ? U M 1967SHa (77589) 218  
K(TiOA+HL)=13.25  
HA=ethanoic acid  
-----

\*\*\*\*\*  
C13H11NO2 HL CAS 304-88-1 (181)  
N-Phenylbenzohydroxamic acid; C6H5.CO.N(C6H5).OH  
-----

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

Ti++++ dis oth/un 20°C 1.0M U K1=11.77 B2=23.40 1970LSd (85181) 219  
K3=11.49  
K4=11.35  
-----

\*\*\*\*\*  
C13H14NO3P H2L CAS 19316-85-7 (1466)  
2-Hydroxyphenyl-N-phenylaminomethylphosphinic acid;  
-----

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

Ti++++ gl NaClO4 20°C 0.10M U K1=7.20 1985SIb (85566) 220  
-----

\*\*\*\*\*  
C13H14N3O5P H2L CAS 80767-75-5 (1467)  
2-Hydroxy-4-nitrophenyl-N-(2-pyridylmethyl)aminomethylphosphinic acid;  
-----

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

Ti++++ gl NaClO4 20°C 0.10M U K1=7.20 1985SIb (85644) 221  
-----

\*\*\*\*\*  
C13H14N3O5P H2L CAS 80767-76-6 (1468)  
2-Hydroxy-4-nitrophenyl-N-(3-pyridylmethyl)aminomethylphosphinic acid;  
-----

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

Ti++++ gl NaClO4 20°C 0.10M U K1=8.10 1985SIb (85657) 222  
-----

\*\*\*\*\*  
C13H15N2O3P H2L CAS 80767-72-2 (1460)  
2-Hydroxyphenyl-(N-2-pyridylmethylamino)methylphosphinic acid;  
-----

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

Ti++++ gl NaClO4 20°C 0.10M U K1=11.80 1985SIa (85784) 223  
\*\*\*\*\*

C13H15N2O3P H2L CAS 80767-73-3 (1461)  
2-Hydroxyphenyl-(N-3-pyridylmethylamino)methylphosphonic acid;

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

Ti++++ gl NaClO4 20°C 0.10M U K1=11.70 1985SIa (85797) 224  
\*\*\*\*\*

C13H15N2O3P H2L CAS 80767-74-4 (1462)  
2-Hydroxyphenyl-(N-4-pyridylmethylamino)methylphosphonic acid;

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

Ti++++ gl NaClO4 20°C 0.10M U K1=11.75 1985SIa (85810) 225  
\*\*\*\*\*

C13H15N2O4P H3L CAS 80767-78-8 (1463)  
2-Hydroxyphenyl-(N-2-pyridylmethylamino)methylphosphonic acid;  
C6H4(OH)CH(PO3H2).NH.CH2.C5H4N

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

Ti++++ gl NaClO4 20°C 0.10M U K1=16.80 1985SIa (85823) 226  
\*\*\*\*\*

C13H15N2O4P H3L CAS 85946-85-6 (1464)  
2-Hydroxyphenyl-(N-3-pyridylmethylamino)methylphosphonic acid;  
C6H4(OH)CH(PO3H2).NH.CH2.C5H4N

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

Ti++++ gl NaClO4 20°C 0.10M U K1=16.90 1985SIa (85836) 227  
\*\*\*\*\*

C13H15N2O4P H3L CAS 85946-86-7 (1465)  
2-Hydroxyphenyl-(N-4-pyridylmethylamino)methylphosphonic acid;  
C6H4(OH)CH(PO3H2).NH.CH2.C5H4N

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

Ti++++ gl NaClO4 20°C 0.10M U K1=17.15 1985SIa (85849) 228  
\*\*\*\*\*

C13H20N04P H3L (1471)  
2-Hydroxyphenyl-N-(cyclohexylamino)methylphosphonic acid;  
C6H4(OH)CH(PO3H2).NH.C6H11

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

Ti++++ gl NaClO4 20°C 0.10M U K1=15.05 1985SIb (86094) 229  
\*\*\*\*\*

C14H12O3 HL Benzilic acid CAS 76-93-7 (710)  
Diphenylglycolic acid, (benzilic acid); (C6H5)2C(OH).COOH

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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    vlt KNO3   25°C 0.20M U          K1=9.40      1986ZFa (87352) 230
*****
C14H16NO3P          H2L                      CAS 25881-35-0 (1469)
Phenyl-N-(benzylamino)methylphosphonic acid; C6H5.CH(PO3H2).NH.CH2.C6H5
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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    gl  NaClO4  20°C 0.10M U          K1=12.60     1985SIb (87813) 231
*****
C14H16NO4P          H3L                      CAS 61146-25-6 (1470)
2-Hydroxyphenyl-N-(benzylamino)methylphosphonic acid; C6H4(OH)CH(PO3H2).NH.CH2.C6H5
-----

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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    gl  NaClO4  20°C 0.10M U          K1=15.60     1985SIb (87826) 232
*****
C14H17N2O4P          H3L                      (1472)
2-Hydroxyphenyl-N-(2-(2'-pyridyl)ethylamino)methylphosphonic
acid;C6H4(OH)CH(PO3H2)NHCH2CH2C5H4N
-----

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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    gl  NaClO4  20°C 0.10M U          K1=15.60     1985SIb (88046) 233
*****
C14H22N2O8          H4L   CDTA                      CAS 482-54-2 (200)
trans-1,2-Diaminocyclohexane-N,N,N',N'-tetraethanoic acid;
-----

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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    gl  KNO3    25°C 0.10M C T H          K1=20.91     1985HWc (88797) 234
Data for 5-35 C. Metal is TiO++. Method: Hg and glass electrodes,
competition with Hg++. DH(K1)=-37.8 kJ mol-1, DS(K1)=274 J K-1 mol-1.
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-----
Ti++++    sp  NaClO4  20°C 0.10M U          K1=18.23     1972NKc (88798) 235
                                K(TiO+HL)=11.14
                                K(TiO+H2L)=8.33
-----

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-----
Ti++++    dis NaClO4  20°C 0.10M U          K(TiO+L)=19.9 1963STc (88799) 236
*****
C14H23N3O10          H5L   DTPA                      CAS 67-43-6 (238)
Diethylenetriamine-pentaethanoic acid; HOOC.CH2.N(CH2.CH2.N(CH2.COOH)2)2
-----

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-----
Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Ti++++    gl  KNO3    25°C 0.10M C T H          K1=23.05     1985HWc (89412) 237
Data for 5-35 C. Metal is TiO++. Method: Hg and glass electrodes,
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competition with Hg<sup>++</sup>. DH(K1)=-104.8 kJ mol<sup>-1</sup>, DS(K1)=89.7 J K<sup>-1</sup> mol<sup>-1</sup>.

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Ti++++ sp oth/un 20°C dil U K1=23.38 1970KAf (89413) 238  
K(Ti+HL)=14.51

\*\*\*\*\*  
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  
-----

Ti++++ gl KNO3 25°C 0.10M C T H K1=20.08 1985HWc (89949) 239  
Data for 5-35 C. Metal is TiO<sup>++</sup>. Method: Hg and glass electrodes,  
competition with Hg<sup>++</sup>. DH(K1)=-80.3 kJ mol<sup>-1</sup>, DS(K1)=115 J K<sup>-1</sup> mol<sup>-1</sup>.

\*\*\*\*\*  
C15H10O7 H5L Quercetin CAS 117-39-5 (5101)  
3,5,7-Trihydroxy-2-(3',4'-dihydroxyphenyl)-1-benzopyran-4-one;  
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Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----

Ti++++ sp non-aq 25°C 100% U K(?)=4.30 1969DSc (91025) 240

Medium: BuOH

\*\*\*\*\*  
C15H13NO2 HL CAS 7369-44-0 (4066)  
N-3-Diphenylpropenohydroxamic acid;  
-----

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

Ti++++ dis oth/un 20°C 1.0M U K1=13.3 B2=26.40 1970LSd (91645) 241  
K3=12.9  
K4=12.7

\*\*\*\*\*  
C16H11NO3 HL HPBI CAS 41836-94-6 (7740)  
3-Phenyl-4-benzoyl-5-isoxazolone;  
-----

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

Ti++++ dis non-aq 30°C 100% U Kd=1.91 1999SPa (92687) 242

Kd: TiO+2HL(org)=TiOL2(org)+2H.

Method: Solvent extraction, H2O/xylene.

\*\*\*\*\*  
C16H14O5 H3L CAS 966-64-3 (5143)  
2,3,7-Trihydroxy-9-propylfluorone;  
-----

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

Ti++++ sp alc/w ? 4% U K(TiOH+2H2L)=32.72 1967NBa (93591) 243  
K(Ti(OH)2+2H2L)=25.70

Medium: 4% EtOH, 0.1 M

\*\*\*\*\*

C17H14N2O2 L CAS 4551-69-3 (698)  
4-Benzoyl-3-methyl-1-phenyl-2-pyrazolin-5-one;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	dis	oth/un	20°C	1.0M	U			K1=8.11 K3=7.76 K4=7.58	1969LSb (95902)	244

\*\*\*\*\*

C17H17NO3 HL CAS 58434-59-6 (1213)  
2'-Hydroxy-4-methoxy-5'-methylbenzylidene acetophenone oxime

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	sp	oth/un	30°C	8.00M	U	M		K(TiO(SCN)+L)=2.29 K(TiO(SCN)L+L)=1.80	1980GKa (96192)	245

\*\*\*\*\*

C18H26N2O6P2 H4L CAS 53431-86-0 (5266)  
Ethylenebis(imino(2-hydroxyphenyl)methylene(methyl)phosphinic acid);

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	EMF	oth/un	?	?	U			K(TiO+2H2L)=8.46 B(TiO+2L)>15	1970DMc (97675)	246

\*\*\*\*\*

C19H12O6 H4L Salicylfluorone (5269)  
9-(2-Hydroxyphenyl)-2,3,7-trihydroxy-6-fluorone;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	sp	alc/w	?	4%	U			K(TiOH+2H2L)=26.19 K(Ti(OH)2+2H2L)=26.19	1967NBa (98996)	247

Medium: 4% EtOH, 0.1 M

\*\*\*\*\*

C19H15NO8 H4L Alizarin Comp. CAS 3952-78-1 (671)  
(3,4-Dihydroxy-2-anthraquinonyl-methyl)iminodiethanoic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Ti++++	sp	oth/un	RT	dil	C			K1eff=4.2 B2eff=8.6	1982EDa (99141)	248

Medium: borax buffer, pH 10.

\*\*\*\*\*

C21H19N3O8S H4L MeNaphtholOrange (4151)

N-(1'-Hydroxy-4'-(4''-sulfophenylazo)-2'-naphthylmethyl)-iminodiethanoic acid;

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Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp NaNO3 20°C 0.20M U B2=22.96 1963BUb (101142) 249  
\*\*\*\*\*  
C23H16O9Cl2S H4L Chrome azuro1 S CAS 1667-99-8 (711)  
Chromazuro1 S;  
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Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp oth/un ? ? U 1969TKc (102575) 250  
K(Ti(OH)2+HL)=5.64  
\*\*\*\*\*  
C23H24N4O2 L Trichachnine CAS 1251-85-0 (2606)  
4,4'-Diantipyrylmethane,  
4,4'-phenylmethylene-bis-(1,2-dihydro-1,5-dimethyl-2-phenylpyrazol-3-one  
-----

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Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp oth/un 20°C 1.0M U 1962BTc (102679) 251  
B3=7.89  
\*\*\*\*\*  
C27H30O16 H4L Rutin CAS 153-18-4 (4169)  
3,3',4',5,7-Pentahydroxyflavone-3-beta-rutinoside;  
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Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp alc/w RT 50% C 2000KMa (104509) 252  
Medium: 50% EtOH/H2O. K(TiO(ox)2+2HL=TiO(Ox)2L2+2H)=10.80 at pH 6.50.  
\*\*\*\*\*  
C31H32N2O13S H6L Xylenol orange CAS 63721-85-5 (432)  
5,5'-Bis-N,N-bis(carboxymethyl)aminomethyl-4'-hydroxy-3,3'-dimethylfuchstone-2''-sulf  
onic acid;  
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Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo  
-----  
Ti++++ sp NaNO3 20°C 0.20M U 1963BGa (105500) 253  
B(Ti2L2)=57.8  
-----  
Ti++++ sp NaClO4 25°C 0.50M U I 19630Ta (105501) 254  
K(TiO+H6L=TiOH5L+H)=3.46  
In 0.05 M HClO4: K(TiO+H6L+H2O2=TiH6LH2O2)=37.68  
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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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END