SC-Database
Software version = 5.81 Data version = 4.62
Experiment list contains 254 experiments for
 (no ligands specified)
 2 metals : Ti+++, Ti++++
 (no references specified)
 (no experimental details specified)

****

e- HL Electron (442)

Electron;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	oth	oth/un	25°C	0.00	U		1963ORa (962)		1
							K(Ti+e=Ti++)=-34, -2000 mV		
Ti+++	EMF	oth/un	0°C	var	U		1924FHa (963)		2
							K(Ti+e=Ti(II))=-6.8(-370 mV)		

****

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

Chloride;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti+++	sp	oth/un	25°C	1.61M	U	I	K1=1.61	1975FBa (5788)	3
Ti+++	dis	NaClO4	25°C	4.0M	U			1975HKa (5789)	4
							K3=0.51		
							K4=0.33		
Ti+++	EMF	non-aq	25°C	100%	U			1971DTb (5790)	5
							K3=4.92		
							K4=2.92		
Medium: SeOCl2, 0.5 M Et4NClO4									
Ti+++	sp	oth/un	rt	var	U		B2=0.37	1971KGa (5791)	6
							K(TiCl2+3H+4Cl=H3TiCl6)=-7.8		
Medium: HCl									
Ti+++	sp	KCl	25°C	var	U		K1=0.56	1971PLa (5792)	7
Ti+++	sp	oth/un	25°C	0.0	U		K1=-1	1967GAa (5793)	8
Ti+++	ix	NaClO4		3.0M	U		K1=0.55 B2=0.15	1967NKe (5794)	9
Metal:TiO++. In LiCl var: K3=-1.03, K4=-1.1									
Ti+++	sp	oth/un	?	12.0M	U			1957JOb (5795)	10
Medium: HCl. K(Ti(III)Cl2+Ti(IV)Cl6=Ti2Cl7(?))=1.08									

```
Ti+++      kin NaClO4 40°C 0.50M U        K1=0.34        1954DQa  (5796)  11
********************************************************************************
F-                      HL    Fluoride         CAS 7644-39-3  (201)
Fluoride;
--------------------------------------------------------------------------------
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
********************************************************************************
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
```

```
-------------------------------------------------------------------------------
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
-------------------------------------------------------------------------------
```

```
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-1, DS=126 J K-1 mol-1. 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-1; DS=143 J K-1 mol-1. Medium: THF
*************************************************************************
C4H6O4                H2L    Me-Malonic Acid  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    Asparagine       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    Pyridine         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    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+++      sp  oth/un 25°C  1.0M U        K1=10.43  B2=18.82  1967LBa (38103)  46
                                       B3=24.9
*************************************************************************
C5H9NO2                 HL    Proline          CAS 147-85-3  (44)
Pyrrolidine-2-carboxylic acid; C4H8N.COOH
```

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

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

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			
Ti+++	gl	oth/un	25°C	3.0M	U		K1=5.62	B2=11.10	1968PGc (42607)	50
							K3=5.48			

Medium: KBr. Method: coulometric titration

Medium: KBr

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+++	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

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

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

```
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
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                     1959KMa (69654)  59
                                        K3=25.28
********************************************************************************
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+++	sp	KCl	20°C	1.20M	U		K(Ti+H2L)=7.50		1973YPa (74225)	60
Ti+++	vlt	NaNO3	25°C	0.10M	U	T	K1=21.3	K(TiO+L)=17.3	1954PMb (74226)	61
Ti+++	vlt	oth/un	?	0.10M	U		K1=17.7		1952BKa (74227)	62

****

C12H8N2 L Phenanthroline CAS 66-71-7 (144)
1,10-Phenanthroline;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values			Reference	ExptNo
Ti+++	sp	oth/un	20°C	?	U		K1=3.78	B2=8.29	B3=12.50	1969TNa (80522)	63

****

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;

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Ti+++	sp	oth/un	20°C	0.20M	U		K(Ti+HL)=6.14, K(Ti+2HL)=14.49	pH=3.5-4.5	1972TPb (99798)	65

****

C23H18O9S H4L Eriochrome cyan CAS 3564-18-9 (433)
4'-Hydroxy-3,3'-dimethyl-2''-sulfofuchsone-5,5'-dicarboxylic acid;

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

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

```
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+nH2O, 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)+H2O. K(TiOHSCN+H+e=TiSCN+H2O)=-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:TiO2(s,hydr)+4H+4e=Ti(s)+2H2O. 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(TiA2Cl+Cl=TiA2Cl2)=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=TiOHCl3+3H2). *Kso=-2.3 (3.5 M NaClO4)
--------------------------------------------------------------------------------
Ti++++     sp  NaClO4 25°C  5.0M U  I     K1=0.60          1969VVa  (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;
```

```
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
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;
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
Ti++++     kin NaClO4 25°C 0.50M U                        1977TTa  (7257)  80
                                        K(TiO+HL=TiOL+H)>2.30
--------------------------------------------------------------------------------
Ti++++     ix  oth/un   ?     ?  U                        1972PAb  (7258)  81
                                        K6=3.79
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
Ti++++     EMF oth/un   ?  0.50M U                        1967PMa  (7260)  83
                                        K6=3.81
Medium: HCl
--------------------------------------------------------------------------------
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
--------------------------------------------------------------------------------
Ti++++     sp  KNO3     ?  0.10M U                        1952KLa  (7262)  85
                                        K(TiO(?)+L)=6.44
********************************************************************************
OH-                   HL    Hydroxide          (57)
Hydroxide;
--------------------------------------------------------------------------------
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: 17O 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(TiL+SO4)=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; -O.O-
-------------------------------------------------------------------------------
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                   1968VVa (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                 1967VVa (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                     1969VVa (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                         1977VVa (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 HgC2O4: 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-1, 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  1969AIc (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(TiOA2+2HL=TiOAL2+HA+H)=-1.66
H2A=oxalic acid
********************************************************************************
C6H6O2                H2L    Catechol         CAS 120-80-9  (534)
1,2-Dihydroxybenzene, pyrocatechol; HO.C6H4.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: H2SO4. In 95% H2SO4, K(TiO+HL)=2.56, K(TiO+2HL)=4.75
--------------------------------------------------------------------------------
Ti++++     EMF R4N.X  20°C 1.00M U    M                  1971GSa (43846) 161
                                        K(TiA2+H2L+2A=TiA2L+2HA)=27.35
                                        K(2TiA2L+A)=13.80
Medium: MeOH, 1.0 M Me4NCl.  HA=MeOH
K(Ti2A5L2+4H2L+3A=2TiL3+8HA)=34.11
--------------------------------------------------------------------------------
Ti++++     sp  oth/un   ?  1.20M U  I M   B2=50.1        1970PLd (43847) 162
Medium: 1.2 M H2L;  Medium: 0.5 M HCl; B(TiAL2)=59.4;
Medium: unknown; K(Ti(OH)2+A+L)=29.3, H2A=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/H2O:
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  NaClO4 20°C 0.10M U                      1963SOa (43850) 165
                                        K(TiO+2H2L=TiO(HL)2+2H)=-1.9
                                        K(TiO(HL)2+H2L=TiL3+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
********************************************************************************
C6H6O3                H3L    Pyrogallol       CAS 87-66-1  (696)
1,2,3-Trihydroxybenzene; C6H3(OH)3
--------------------------------------------------------------------------------
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)

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
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; HO3S.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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti++++	sp	oth/un	20°C	0.10M	U			1963SOa (55057)	190
							K(TiO+2H+3L)=42.2		
							K(TiO+2HL)=5.4		
							K(TiO+HL)=3.1		

****

C7H7NO2 H2L Salicylaldoxime CAS 94-67-7 (1486)

2-Hydroxybenzaldehyde oxime; HO.C6H4.CH:N.OH

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-1, DS=-71 J K-1m-1
****
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 1970OMb (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(Ti(OH)3+3H2L=Ti(OH)(HL)3+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(Ti(OH)2+2H2L=Ti(OH)2(HL)2+2H)=14.36
K(Ti(OH)3+3H2L=Ti(OH)(HL)3+H)=25.92

Ti++++ sp mixed 20°C 100% U I 1966CSb (69974) 207
K(TiO+HL)=7.34
K(TiO+2HL)=12.17
Medium: DMF/H2O, TiO 0.005 M: K1=4.80(0% DMF),5.60(25%),6.26(50%-74%);
With 0.0025 TiO:K1=5.05(0%),5.57(25%),6.12(50%),6.57(74%),7.38(100%)

Ti++++ sp NaClO4 20°C 0.10M U 1963SOa (69975) 208
K(TiO+2L)=40.5
K(TiO+3L)=56.4
K(TiO+2H+3L=TiL3)=60.5
K(TiOL2+2H=TiO(HL)2)=4.4

Ti++++ sp oth/un 20°C 0.10M U B2=6.18 1959SOc (69976) 209
B3=10.59

Ti++++ sp oth/un 20°C 0.10M U 1957BPc (69977) 210
K(Ti+H2L)=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 B2=21.17 1961HSa (71609) 211
B3=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 KNO3 25°C 0.20M U K1=22.61 1986ZFa (74228) 212

Ti++++ gl KNO3 25°C 0.10M C T H K1=18.47 1985HWc (74229) 213
Data for 5-35 C. Metal is TiO++. Method: Hg and glass electrodes,
competition with Hg++. DH(K1)=-31.3 kJ mol-1, DS(K1)=250 J K-1 mol-1.

Ti++++ sp NaClO4 20°C 1.0M U 1971KNa (74230) 214
K(TiO+L)=18.15
K(TiO+HL)=12.08

Ti++++ dis NaClO4 20°C 0.10M U T 1963STc (74231) 215
K(TiO+L)=17.5

****

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
--------------------------------------------------------------------------------
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)aminemethylphosphinic 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)aminemethylphosphinic 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)methylphosphinic 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)methylphosphinic 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
****
C13H20NO4P 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

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

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

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

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;

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.

Ti++++ sp NaClO4 20°C 0.10M U K1=18.23 1972NKc (88798) 235
K(TiO+HL)=11.14
K(TiO+H2L)=8.33

Ti++++ dis NaClO4 20°C 0.10M U 1963STc (88799) 236
K(TiO+L)=19.9
****
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
---
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,

competition with Hg++. DH(K1)=-104.8 kJ mol-1, DS(K1)=89.7 J K-1 mol-1.

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-O,O'-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++. Method: Hg and glass electrodes,
competition with Hg++. DH(K1)=-80.3 kJ mol-1, DS(K1)=115 J K-1 mol-1.

****

C15H10O7 H5L Quercetin CAS 117-39-5 (5101)
3,5,7-Trihydroxy-2-(3',4'-dihydroxyphenyl)-1-benzopyran-4-one;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ti++++	sp	non-aq	25°C	100%	U			1969DSc (91025)	240
							K(?)=4.30		

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			1999SPa (92687)	242
							Kd=1.91		

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			1967NBa (93591)	243
							K(TiOH+2H2L)=32.72		
							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 B2=16.06 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 MeNaptholOrange (4151)

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

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 azurol S CAS 1667-99-8 (711)
Chromazurol S;

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

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;

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'-dimethylfuchsone-2"-sulfonic acid;

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		1963OTa (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

END