SC-Database
Software version = 5.81 Data version = 4.62
Experiment list contains 52 experiments for
 (no ligands specified)
 Metal : Ta
 (no references specified)
 (no experimental details specified)

****
e- HL Electron (442)
Electron;

Metal | Mtd | Medium | Temp | Conc | Cal | Flags | Lg K values | Reference | ExptNo
---
Ta | sp | NaClO4 | 25°C | 0.10M | U | | K(Ta6Cl12 + e)=14.0 (830mV) | 1971CKa (948) | 1
Medium:HClO4. K=8.3(0.49V,(+++)). For Br complex, values are 15.0(0.89V) and 10.0(0.59V) (Esce=0.242V). Method:spectroscopy and current-voltage studies
---
Ta | kin | NaClO4 | 15°C | 0.10M | U | | K=-1.74 | 1966EMb (949) | 2
Medium 0.1M HClO4. By spectrophotometry, 22 C: K'=-1.80

Ta | oth | none | 25°C | 0.0 | U | | K=-68.6(-810 mV) | 1952LAb (950) | 3
K: 0.5Ta2O5(s)+5H+5e=Ta(s)+2.5H2O. From thermodynamic data
****
Cl- HL Chloride CAS 7647-01-0 (50)
Chloride;

Metal | Mtd | Medium | Temp | Conc | Cal | Flags | Lg K values | Reference | ExptNo
---
Ta | ISE | oth/un | 175°C | ? | C | | K6=3.89 | 1992BMa (5760) | 4
Medium: NaCl-AlCl3 melt.

Ta | nmr | oth/un | -90°C | var | U | M | K'=0.52(cis)
K'=1.15(trans)
K"=2.39(cis)
K"=-1.35(trans) | 1971BIb (5761) | 5
K': 5TaF2L4=TaF6+4TaFL5. K": 5TaF3L3=2TaF6+3TaFL5. K(5TaF4L2=3TaF6+2TaFL5)= -1.29(cis); -0.96(trans). Data also for other complexes and Br analogues
---
Ta | gl | alc/w | 25°C | 100% | U | M | K'=-3.55
K"=-7.83 | 1965GSd (5762) | 6
Medium: MeOH. K':TaCl5+MeOH=TaOMeCl4+H+Cl, K":TaCl5+2MeOH=Ta(OMe)2Cl3+2H+2Cl
---
Ta | oth | non-aq | 300°C | 100% | U | T | | 1959COa (5763) | 7

K6=3.2 , x units
K(TaCl5(g)+Cl(melt))=1.8
Method: by partial pressure of TaCl5. Medium: liquid NaFeCl4.
K(TaCl5(g)+Cl(in melt)=TaCl6(in melt))=0.5(400 C) atm and x units
****
F- HL Fluoride CAS 7644-39-3 (201)
Fluoride;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Ta ISE non-aq ? 100% C 1978GRa (7209) 8
K6=8.88
K(TaF5+TaF6=Ta2F11)=1.50
Medium: liquid anhydrous HF

Ta sp oth/un ? ? U 1973LCa (7210) 9
K(TaH2O2+F)=2.39
B(TaH2O2+2F)=2.35
B(TaH2O2+3F)=1.93
B(TaH2O2+4F)=1.83

Ta ISE NaClO4 25°C 2.0M U K1=6.37 B2=11.85 1972BAb (7211) 10
B3=16.03
B4=19.63
B5=23.29
B7=30.21
Metal: Ta(V)

Ta ix NaClO4 25°C 1.0M U 1969VAa (7212) 11
K4=5.90
K4K5=10.80
Metal: Ta(V). Method: quinhydrone electrode also

Ta ix NaClO4 25°C 3.0M U 1969VAa (7213) 12
K4.K5.K6.K7=18.9
K4.K5.K6.K7.K8.K9=25.2
Medium: HClO4. Metal: Ta(V). Medium: quinhydrone electrode also used
---
Ta EMF NaClO4 25°C 1.0M U 1966BFb (7214) 13
K6=3.75
K7=3.10
K8=0.66
Method: quinhydrone electrode

Ta dis NaClO4 25°C 3.0M U 1965VWa (7215) 14
K4=5.86
K4K5=10.77
B6/B3=15.67
B7/B3=20.15

```
Ta         ix  oth/un 25°C 1.00M U                          1962VFa  (7216)  15
                                        K5=4.8
                                        K6=3.6
                                        K7=3.3
                                        K8=3.0
K9=3.6. Method: anion exchage and quinhydrone electrode.
*****************************************************************************
O2--                   H2L    Peroxide         CAS 7772-84-1  (2813)
Peroxide; -O.O-
-----------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-----------------------------------------------------------------------------
Ta         sp  oth/un 20°C  78%  U TIH                     1973VZa (12699)  16
                                        K(TaOSO4+H2L)=2.73
Medium:78.4% H2SO4. K=2.80(15 C), 2.62(35 C), 2.55(55 C)
DH=-17 kJ mol-1 (TaO(SO4) assumed)  also 63.5, 88.7, 94.5%
-----------------------------------------------------------------------------
Ta         sp  oth/un  0°C  90%  U                         1969CKa (12700)  17
                                        K(TaOSO4+H2L)=3
Medium:H2SO4
-----------------------------------------------------------------------------
Ta         sp  oth/un  0°C  10%  U  I                      1969VZa (12701)  18
                                        K(TaOSO4+H2L)=1.48
Medium: 10% H2SO4   K=1.48(20%), 2.20(30%), 2.59(50%), 2.80(70%), 3.38(80%),
3.59(100%)
-----------------------------------------------------------------------------
Ta         sp  non-aq   ?  100%  U                         1968VZa (12702)  19
                                        K(Ta(V)+H2L)=3.43
Medium: H2SO4
-----------------------------------------------------------------------------
Ta         vlt oth/un 25°C 0.34M U                         1964BRb (12703)  20
                                        B(HTaO3+H2L)=2.0
Medium: H2SO4
*****************************************************************************
SCN-                    HL    Thiocyanate      CAS 463-56-9  (106)
Thiocyanate;
-----------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-----------------------------------------------------------------------------
Ta         sp  alc/w    ?  100%  U  I     K1=3.12   B2=5.48   1964GSa (15264)  21
                                        B3=7.77
Medium:MeOH. In BuOH: K1=3.68, B2=7.05, B3=11.42. In Me2NCHO: K1=3.15,
B2=5.92, B3=8.55, B4=11.06, B5=13.52, B6=15.96
*****************************************************************************
CH4O                     L    Methyl alcohol   CAS 67-56-1  (597)
Methanol; CH3.OH
-----------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-----------------------------------------------------------------------------
Ta         EMF alc/w  20°C 100%  U    M                   1965GBa (17902)  22
```

K(TaA(L')4+2L'=Ta(L')6+A)=7.1
K(Ta(H-1L)4+A)=11.04
K(TaA(H-1L)3+TaH-1L)=12.95
K(Ta(L')5+HA=TaA(L')4+L)=4.36
Method: H electrode. Medium: MeOH, 1.0 M Me4NCl. HA=acetylacetone, L'=H-1L

Ta EMF alc/w 20°C 100% U M 1965GBa (17903) 23
K'=14.2
K"=7.85
K(TaA(L')3+L'=TaA(L')4)=9.04
K'"=2.5
Method: H electrode. Medium: MeOH, 1.0 M Me4NCl; H2A=catechol; L'=H-1L. K': TaA(L')3+H2A+L'=TaA2(L')2+2L. K":TaA2(L')2+H2A+L'=TaA3L'. K'":TaAL'4+TaAL'3

Ta EMF alc/w 20°C 100% U 1964GUa (17904) 24
K(Ta(H-1L)4+H-1L)=11.47
K(Ta(H-1L)5+H-1L)=6.67
K(Ta(H-1L)6+H=Ta(H-1L)5+L)=5.1
K(Ta(H-1L)7+H=Ta(H-1L)6+L)=9.9
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
---
Ta sol oth/un ? 0.10M U 1970ZPa (19077) 25
K3=5.91
Medium: HClO4
Metal ion is TaO+++

Ta sol oth/un 19°C ? U 1965BLd (19078) 26
K(Ta(OH)2+L)=11.10
K(Ta(OH)2+2L)=18.52
K(Ta(OH)2L+OH)=13.33
****
C2H3N L Cyanomethane CAS 75-05-8 (1399)
Acetonitrile; CH3.CN

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Ta nmr non-aq -60°C 100% U M 1974GMa (19196) 27
K(TaBr5A+L=TaBr5L+A)=-0.89
Medium: CH2Cl2. A=t-butylcyanide

Ta nmr non-aq -40°C 100% U M 1972MBb (19197) 28
K(TaCl5A+L=TaCl5L+A)=0.32
Medium: CHCl3. A=dimethylether. K=0.36, A= 1,4-dioxan;
K=1.57, A=diethylether; K=0.70, A=1,4-dithiane.
****

C2H6NOCl2P L CAS 667-43-0 (910)
Dichloro(dimethylamine)phosphine oxide; (CH3)2N.P(O)Cl2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaBr5A+L=TaBr5L+A)=1.48	1974GMa (21901)	29

Medium: CH2Cl2, A=acetonitrile

****

C2H6O L CAS 115-10-6 (4214)
Dimethyl ether; CH3.O.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-40°C	100%	U	M	K(TaCl5A+L=TaCl5L+A)=1.25	1972MBb (22021)	30

Medium: CHCl3l. A=diethyl ether. K=0.04, A=dioxan. Metal ion: Ta(V)

****

C2H6S L CAS 75-18-3 (151)
Dimethyl sulfide; CH3.S.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaCl5A+L=TaCl5L+A)=0.72	1974GMa (22195)	31

Medium: CH2Cl2, A=pivalocyanide

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaBr5A+L=TaBr5L+A)=0.24	1974GMa (22196)	32

Medium: CH2Cl2, A=pivalocyanide

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-40°C	100%	U	M	K(TaCl5A+L=TaCl5L+A)=0.26	1972MBb (22197)	33

Medium: CHCl3. A=t-butylnitrile. K=0.40, A=acetonitrile, K=1.98, A=diethyl ether. K=0.72, A=diethyl sulfide. K=0.72, A=dimethyl sulfide.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaBr5A+L=TaBr5L+A)=0.24	1972MBb (22198)	34

Medium: CH2Cl2. A=pivalonitrile.

****

C2H6Se L DiMeSelenide CAS 81369-92-3 (911)
Dimethylselenide; CH3.Se.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaCl5A+L=TaCl5L+A)=0.06 K(TaBr5A+L=TaBr5L+A)=0.43 K(TaBr5B+L=TaBr5L+B)=0.67	1974GMa (22207)	35

Medium: CH2Cl2, A=dimethylthioether, B=t-butylcyanide

****
C2H6Te L DiMeTelluride CAS 593-80-6 (912)
Dimethyltelluride; CH3.Te.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Ta nmr non-aq -60°C 100% U M 1974GMa (22209) 36
K(TaCl5A+L=TaCl5L+A)=0.25
K(TaCL5B+L=TaCl5L+B)=0.31
K(TaBr5A+L=TaBr5L+A)=0.95
Medium: CH2Cl2, A=selenobismethane, B=thiobismethane
****
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
---
Ta dis oth/un 22°C 3.00M U M 1972SSj (31366) 37
K(Ta(OH)4+L)=0.72
K(Ta(OH)4+H-1L)=8.83
K(Ta(OH)4+H-2L)=15.3
****
C4H8OS L 1,4-Thioxane CAS 15980-15-1 (4266)
1,4-Oxathiane; cyclo(-O.CH2.CH2.S.CH2.CH2-)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Ta nmr non-aq -60°C 100% U M 1972MBb (33191) 38
K(TaCl5L+A=TaCl5A+L)=0.70
Medium: CHCl3. A=t-butyl nitrile
****
C4H8S L CAS 110-01-0 (150)
Tetrahydrothiophene; cyclo(-CH2.CH2.S.CH2.CH2-)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Ta nmr non-aq -60°C 100% U 1972MBb (33742) 39
K(TaCl5A+L=TaCl5L+A)=0.63
A=t-butyl mercaptan. Medium: CHCl3
****
C4H8S2 L 1,4-Dithiane CAS 505-29-3 (4255)
1,4-Dithiane; cyclo-(S.CH2.CH2.S.CH2.CH2-)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Ta nmr non-aq -60°C 100% U 1972MBb (33744) 40
K(TaCl5A+L=TaCl5L+A)=0.85
A=t-butyl nitrile. Medium: CHCl3
****
C4H10S L CAS 352-93-2 (4259)

Diethyl sulfide; C2H5.S.C2H5

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaBr5A+L=TaBr5L+A)=-0.61	1974GMa (34722)	41

A=t-butyl nitrile. Medium: CH2Cl2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-40°C	100%	U	M	K(TaCl5A+L=TaCl5L+A)=0.00	1972MBb (34723)	42

A=dimethyl ether. Medium: CHCl3.

****

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
Ta	EMF	non-aq	20°C	100%	U	M	K(TaA5+HL=TaA4L+HA)=4.36 K(TaA3L+A)=12.95 K(TaA4L+2A=TaA6+L)=7.10	1971GSa (38090)	43

Medium: MeOH. HA=MeOH

****

C5H9N L t-Butylnitrile CAS 7188-38-7 (913)
t-Butylcyanide;(CH3)3C.CN

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-60°C	100%	U	M	K(TaBr5A+L=TaBr5L+A)=0.11 K(TaBr5B+L=TaBr5L+B)=0.39 K(TaBr5C+L=TaBr5L+C)=1.72	1974GMa (38456)	44

Medium: CH2Cl2, A=acetonitrile, B=thiobismethane, C=dimethylether

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	nmr	non-aq	-40°C	100%	U	M	K(TaCl5A+L=TaCl5L+A)=0.47	1972MBb (38457)	45

Medium: CHCl3. A=dimethyl ether. When A=cyanomethane, K=0.15,
A=1,4-dioxan (-60 C), K=0.51

****

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
Ta	EMF	alc/w	20°C	100%	U	M	K(TaA3L+A)=9.04 K(TaA3L+TaA4L=Ta2A7L2)=2.50 K(TaA3L+H2L+A=TaA2L2+2HA)=14.2 K(TaA2L2+H2L+A=TaAL3+2HA)=7.85	1971GSa (43837)	46

Medium: MeOH, 1.0 M Me4NCl. HA=CH3OH

****

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
Ta	sp	oth/un	?	?	U		K1=9.5	1966SAb (45660)	47

****

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
Ta	vlt	oth/un	20°C	1.08M	U			1969VSb (74191)	48
							K(Ta(OH)2+L)=33.6		

Medium: K2SO4

****

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
Ta	sp	oth/un	25°C	?	C		K1=5.77	1980LZb (77582)	49

Medium: hexamethylenetetramine ((CH2)6N4) buffer solution, pH 5.6

Ta	sp	oth/un	25°C	?	U			1967ADa (77583)	50
							K(?)=4.5		

****

C14H8O7S H3L DASA CAS 83-61-4 (950)
1,2-Dihydroxyanthraquinone-3-sulfonic acid, Alizarin Red S;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Ta	sp	oth/un	?	?	U			1968ADa (86757)	51
							B((TaO)L2)=8.27		

****

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
Ta	sp	oth/un	30°C	8.00M	U	M		1980GKa (96191)	52
							K(TaO(SCN)+L)=3.56		
							K(TaO(SCN)L+L)=2.07		

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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

END