SC-Database
Software version = 5.81 Data version = 4.62
Experiment list contains 58 experiments for
 (no ligands specified)
 3 metals : Pa(IV), Pa(V), Pa++
 (no references specified)
 (no experimental details specified)

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

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Pa(IV) oth none rt 0.0 U 1956FEa (770) 1
K(PaF7+5e=Pa(s))=-85(-1000 mV)
****
Cl- HL Chloride CAS 7647-01-0 (50)
Chloride;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Pa(IV) dis NaClO4 25°C 3.0M U B2=0 1966GUb (5320) 2
B3 < 0

Pa(IV) dis NaClO4 3.0M U 1965GUc (5321) 3
*K1 < 0
*B2=0
****
F- HL Fluoride CAS 7644-39-3 (201)
Fluoride;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Pa(IV) dis NaClO4 ? 3.0M U T 1965GUc (7076) 4
K(PaO2+HF=PaO2F+H)=4.73
K(PaO2+2HF=PaO2F2+2H)=8.26
****
NO3- HL Nitrate CAS 7697-37-2 (288)
Nitrate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Pa(IV) ix NaClO4 25°C 1.0M U K1=0.16 B2=-0.99 1967KRa (9830) 5
****
OH- HL Hydroxide (57)
Hydroxide;

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

```
Pa(IV)     dis NaClO4   ?  3.00M U                        1970LIa (11842)   6
                                        *B(PaO+H2O=PaO2+2H)=0.96
Pa: Pa(V). Kw=-14.22
-------------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C 3.00M U                        1968GUb (11843)   7
                                        *K1=-0.14
                                        *B2=-0.52
                                        *B3=-1.6 to -2.0
                                        *B4=-5.3
Medium: 3 M LiClO4
*******************************************************************************
O2--                  H2L    Peroxide         CAS 7772-84-1  (2813)
Peroxide; -O.O-
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C  3.0M U                        1969STa (12694)   8
                                        K(PaOOH+H2L=PaOOH(HL)+H)=2.3
                                        K(PaOOH+2H2L)=3.25
                                        K(PaOOH+H2L=PaOHL+H2O)=2
                                        K(PaOOH+2H2L=PaO(HL)2+H)=3.2
*******************************************************************************
SO4--                 H2L    Sulfate          CAS 7664-93-9  (15)
Sulfate;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Pa(IV)     dis oth/un 10°C 0.50M U                        1969OGb (16431)   9
                                        K(Pa(OH)2+HL=PaOHL+H2O)=2.50
-------------------------------------------------------------------------------
Pa(IV)     dis oth/un 10°C 0.50M U                        1968MIb (16432)  10
                                        K(Pa(OH)2+HL=PaLOH+H2O)=2.51
-------------------------------------------------------------------------------
Pa(IV)     dis NaClO4   ?   3.0M U T                      1965GUd (16433)  11
                                        *K1=1.62
                                        *B2=2.18
Medium: HClO4
*******************************************************************************
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
-------------------------------------------------------------------------------
Pa(IV)     oth oth/un 25°C  0.0  U        K1=10.7   B2=20.3   1967MEc (19005)  12
                                        B3=26.5
                                        B4=29.2
*******************************************************************************
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
-------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C 1.00M C T H    K1=6.1    B2=6.2    1974LUa (38050)  13
                                          B(PaOL2=PaOL2(org)=2.07
M=PaO++; Organic phase: benzene. DH(Kd)=14 kJ mol-1.
DH(Kd)=30 kJmol-1; Kd(PaO+2HL(org)=PaOL2(org)+2H)=-4.13
-------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C 1.00M C T H                  1974LUb (38051)  14
                                          B'2=12.3
                                          B'3=18.34
                                          K(Pa(OH)L3=Pa(OH)L3(org))=2.54
Organic phase=benzene; B'n:Pa(OH)SO4+nL=Pa(OH)Ln+SO4
Kd: Pa(OH)SO4+3HL(org)=Pa(OH)L3(org)+3H+SO4
*************************************************************************
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
-------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C 3.00M U    M                 1968GUa (46209)  15
                                          K(MO(OH)+H3L=MO(OH)H2L+H)=1.30
                                          K(MO(OH)+2H3L=MO(H2L)2+H)=1.80
                                          K(MO(OH)+H3L=MO(OH)HL+2H)=0.0
                                          K(MO(OH)2+H3L=MO(OH)HL+H)=1.11
*************************************************************************
C10H10O2              HL    Benzoylacetone   CAS 93-91-4  (197)
1-Phenylbutane-1,3-dione; C6H5.CO.CH2.CO.CH3
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C 1.00M C                      1975LUa (70760)  16
                                          Kd(Pa)=-0.7
Organic phase=benzene
Kd(Pa): PaO+4HL(org)=PaL4(org)+2H+H2O
*************************************************************************
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
-------------------------------------------------------------------------
Pa(IV)     dis NaClO4 25°C 1.00M C                      1974LUc (74036)  17
                                          K(PaO+L)=19.0
                                          K(PaO+H+L)=20.5
*************************************************************************
e-                    HL    Electron          (442)
Electron;
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Pa(V)      oth oth/un 25°C  6.0M U                      1962HPb   (771)  18
```

```
                                        K(Pa+e=Pa(IV))=-4.9(-290 mV)
********************************************************************************
AsO4---               H3L    Arsenate         CAS 7778-39-4  (1557)
Arsenate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      oth oth/un   ?   6.0M U                        1966DMg  (1155)  19
                                        K(Pa+H3L)=1.65
                                        K(Pa+2H3L)=2.75
Method:sorption on silica gel.  Medium:HNO3
********************************************************************************
Cl-                    HL    Chloride         CAS 7647-01-0  (50)
Chloride;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  1.0M U        K1=0.21   B2=-0.68  1967KRa  (5322)  20
Medium:HClO4
--------------------------------------------------------------------------------
Pa(V)      dis oth/un 20?°C  0.0  U                       1966SNd  (5323)  21
                                        K(Pa(OH)3+L)=0.0
                                        K(Pa(OH)3+2H+6L=PaCl6)=-11.26
                                        K(Pa(OH)3+3H+6L=PaCl6)=-13.70
Kd values into benzene also given
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4   ?   3.0M U                       1965GUc  (5324)  22
                                        K(Pa(OH)3+L)=0.08
********************************************************************************
F-                     HL    Fluoride         CAS 7644-39-3  (201)
Fluoride;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  1.0M U                       1967KRa  (7077)  23
                                        *K1=3.95
                                        *K2=3.48
                                        *K3=3.04
*Kn: K(PaF(n-1)+HL=PaFn+H)
--------------------------------------------------------------------------------
Pa(V)      EMF NaClO4 25°C  1.0M U        K1=5.4    B2=10.40  1966BFb  (7078)  24
                                        K3=4.9
                                        K4=4.8
                                        K5=4.5
                                        K6=4.4
K7=3.7, K8=1.7.  Method:quinhydrone electrode.
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  3.0M U                       1966GUb  (7079)  25
                                        K(PaOOH+HF=PaOF+H2O)=3.56
                                        K(PaOOH+2HF-H)=7.65
```

K(PaOOH+3HF-2H)=10.91

Pa(V) dis NaClO4 ? 3.0M U 1965GUc (7080) 26
K(Pa(OH)3+HF)=3.56
K(Pa(OH)3+2HF-H)=7.65
K(Pa(OH)3+3HF-2H)=10.90

****

IO3- HL Iodate CAS 7782-68-5 (1257)
Iodate;

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

---

Pa(V) dis NaClO4 25°C 1.0M U 1967KRa (8542) 27
*K1=2.11
*K2=1.54

****

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

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

---

Pa(V) dis NaClO4 ? 5.0M U K1=1.23 B2=2.10 1966KDa (9831) 28
B3=2.73
B4=3.14
Medium: HClO4. Probably Pa(OH)2+++. Kd(Pa(OH)2+2H+5L+2TPB(in C6H6)= PaL5(TBP)2(in C6H6)+2H2O)=3.73

Pa(V) ix NaClO4 20°C 4.0M U I K1=-0.20 B2=-0.68 1963NPa (9832) 29
Medium: HClO4. I=2.0: K1=-0.10, B2=-0.13; I=1.0: K1=-0.17, B2=0.48, B4=1.08

Pa(V) dis NaClO4 20°C 6.0M U 1963SIa (9833) 30
K6=-0.85
K7=0.04
Medium: HClO4. Kd(PaL5+2TBP(C6H6)=PaL5(TBP)2(C6H6))=0.7

****

OH- HL Hydroxide (57)
Hydroxide;

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

---

Pa(V) dis NaClO4 25°C 0.10M C I 2002TLa (11844) 31
K(PaOOH+H2O=PaO(OH)2+H)=-2.0
Extraction of 233Pa with thenoyltrifluoracetone from HClO4/NaClO4 into toluene. K(PaO(OH)2+2H2O=PaO(OH)5+H)=-7.0. Data for 1.05 and 3.52 m.

Pa(V) dis NaClO4 25°C 0.0 C I 2002TLa (11845) 32
K(PaOOH+H2O=PaO(OH)2+H)=-1.26
Extraction of 233Pa with TTA from HClO4/NaClO4 into toluene. K(PaO(OH)2+2H2O=PaO(OH)5+H)=-7.15. SIT analysis of data for 0.1-3.52 m.

```
Pa(V)      dis NaClO4 25°C 3.00M U                        1968GUb (11846)  33
                                        K(PaO3(OH)+H)=5.55
                                        K(PaO2+H)=1.05
Medium: 3 M LiClO4
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C 3.00M U                        1965GUa (11847)  34
                                        K(PaO(OH)3+H)=1.05
Medium: 3 M LiClO4
--------------------------------------------------------------------------------
Pa(V)      dis NaNO3  20°C  6.0M U                        1959MIb (11848)  35
                                        *K1(PaA(H2O)3)=2.1
                                        *K2(PaA(OH))=1.46
                                        *K3(PaA(OH)2)=1.32
Medium: LiNO3. HA=(CHMeEtO)2PO2H
--------------------------------------------------------------------------------
Pa(V)      oth oth/un   ?   var  U                        1959SSc (11849)  36
                                        Kso(Pa(OH)5)=-55(?)
Method: adsorption studies
********************************************************************************
PO4---                H3L    Phosphate        CAS 7664-38-2  (176)
Phosphate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C 1.00M U                        1973CGd (13283)  37
                                        K(PaOOH+H3L=PaOOHH2L+H)=1.75
                                        K(PaOOH+2H3L=PaOH3LH2L)=3.04
                                        K(PaOOH+2H3L=PaO(H2L)2+H)=1.91
                                        K(PaOOH+H2O=PaO(OH)2+H)=-1.05
Medium: LiClO4, K(PaOOH+3H3L+HSO4=PaO(H2L)3HSO4+2H)=5.11
K(PaOOH+3H3L=PaO(H2L)3+2H)=4.07
--------------------------------------------------------------------------------
Pa(V)      oth KNO3     ?   6.0M U                        1966DMg (13284)  38
                                        K(Pa+H3L)=1.54
                                        K(Pa+2H3L)=2.20
Method:sorption on silica gel. Medium: HNO3
********************************************************************************
SO4--                 H2L    Sulfate          CAS 7664-93-9  (15)
Sulfate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  1.0M U                        1973CGd (16434)  39
                                        K(PaOOH+HL)=1.49
                                        K(PaOOH+2HL+H=PaO(HL)2)=2.40
Medium: LiClO4
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  1.0M U                        1967KRa (16435)  40
                                        K(Pa+HL=PaL+H)=2.08
                                        K(PaHL+HL=PaL2+H)=0.23
```

```
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 17°C 1.38M U                      1967MSa (16436)  41
                                        K(Pa(OH)4+2H+L=Pa(OH)2L)=0.81
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  3.0M U                      1966GUb (16437)  42
                                        K(PaOOH+HL=PaOL+H2O)=1.29
                                        K(PaOOH+2HL=PaOL2+H+H2O)=2.51
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4   ?   3.0M U                      1965GUd (16438)  43
                                        K(Pa(OH)3+HL)=1.3
                                        K(Pa(OH)3+2HL+H)=2.5
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 20°C  2.0M U  I                   1963NPa (16439)  44
                                        K1eff=0.06
                                        B2eff=1.17
********************************************************************************
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
--------------------------------------------------------------------------------
Pa(V)      ix  KNO3     ?  1.00M U        K1=1.81   B2=2.51   1966DMb (19006)  45
                                        B3=4.34
Medium : 1-6 M HNO3
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 25°C 0.25M U                      1966GAa (19007)  46
                                        K(Pa2O(OH)3+HL)=2.60(?)
                                        K(Pa2O(OH)2+2HL)=3.95(?)
********************************************************************************
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
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un   ?  0.25M U                      1962GLa (25499)  47
                                        K(PaO(OH)+L)=2.24(?)
********************************************************************************
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
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 25°C 0.25M U                      1966GAa (30697)  48
                                        K(Pa2O(OH)1.5+HL)=2.42(?)
                                        K(Pa2O(OH)1.5+2HL)=4.80(?)
********************************************************************************
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
```

```
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 25°C 0.25M U                      1966GAa (31324)  49
                                       K(Pa2O(OH)3.5+HL)=2.34 ?
                                       K(Pa2O(OH)4.5+2HL)=4.96 ?
********************************************************************************
C4H8O3                 HL                    CAS 594-61-6  (81)
2-Hydroxy-2-methylpropanoic acid; (CH3)2C(OH).COOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un   ?  0.25M U                      1962GLa (33501)  50
                                       K(?)=3.47
                                       K(?)=7.00
********************************************************************************
C5H8O7                H2L                    CAS 40120-71-6  (3022)
2,3,4-Trihydroxypentanedioic acid, Trihydroxyglutaric acid; HOOC.(CH(OH))3.COOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 25°C 0.25M U                      1966GAa (38433)  51
                                       K(Pa2O(OH)3+HL)=2.80 ?
********************************************************************************
C6H6O6                H3L    Aconitic acid    CAS 449-12-7  (3647)
1,2,3-Propenetricarboxylic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 25°C 0.25M U                      1966GAa (44291)  52
                                       K(?)=2.39
********************************************************************************
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
--------------------------------------------------------------------------------
Pa(V)      ix  oth/un 25°C 0.25M U                      1966GAa (46210)  53
                                       K(?)=3.43
                                       K(?)=5.92
********************************************************************************
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
--------------------------------------------------------------------------------
Pa(V)      dis NaClO4 25°C  3.0M U                      1965GUa (58663)  54
                                       K(Pa(OH)3+L)=2.26
                                       K(Pa(OH)3+2L)=2.2
                                       K(Pa(OH)3+OH+L)=-0.9
                                       K(Pa(OH)3+OH+L+2HL)=6.2
Medium: LiClO4. K(Pa(OH)3+2L+2HL=Pa(OH)3L2(HL)2) < 9.6
```

****

C8H8O3 HL Mandelic Acid CAS 611-72-3 (80)
2-Phenyl-2-hydroxyethanoic acid; C6H5.CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pa(V)	ix	oth/un	?	0.25M	U		1962GLa (59860)		55
							K(?)=2.85		

****

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
Pa(V)	dis	oth/un	20°C	1.0M	U		1969SKa (74037)		56
							K(Pa(OH)2+L)=22.1 pH 0-2		
Pa(V)	ix	oth/un	25°C	0.25M	U		1966GAa (74038)		57
							K(?)=8.19		
							K(?)=11.96		

****

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
Pa++	dis	NaClO4	20°C	1.0M	U		K1=8.3 B2=15.44	1968DKb (58664)	58

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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