SC-Database
Software version = 5.81 Data version = 4.62
Experiment list contains 633 experiments for
 (no ligands specified)
 6 metals : Cr(0), Cr(V), Cr(VI), Cr+, Cr++, Cr+++
 (no references specified)
 (no experimental details specified)

****
C3H9O3P L CAS 121-45-9 (1786)
Trimethylphosphite; (CH3O)3.P

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(0) cal non-aq 25°C 100% U HM 1991ZGa (28001) 1
Medium: THF. DH(Mo(CO)3A2+L)=-68.6 kJ mol-1, A=P(C6H11)3
****
C18H33P L CAS 2622-14-2 (169)
Tri-(cyclohexyl)phosphine; (C6H11)3P

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(0) cal non-aq 25°C 100% U T HM 1991ZGa (98308) 2
  K(Cr(CO)3py2+L)=-1.91
Medium: THF. 5-25 C. K=-2.50(5C); -2.24(15C). DH=-49.6 kJ mol-1, DS=-121
****
e- HL Electron (442)
Electron;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(V) EMF KCl 25°C 0.10M C 1996BFd (424) 3
  K(Cr(O)L2+e)=7.44(440 mV)
  K(Cr(O)L2+H+e)=10.99(650 mV)
  K(Cr(O)L2+2H+e)=14.37(850 mV)
  K(Cr(O)L2+2H+2e)=28.40(840 mV)
Method: cyclic voltammetry at C electrode.
H2L is 2-ethyl-2-hydroxybutanoic acid

Cr(V) EMF KCl 25°C 0.10M C 1996BFd (425) 4
  K(Cr(O)L2+2H+e)=20.96(1240 mV)
  K(Cr(O)HL2+H+e)=17.41(1030 mV)
Method: cyclic voltammetry at C electrode. Cr is Cr(IV).
H2L is 2-ethyl-2-hydroxybutanoic acid. K(Cr(O)(HL)2+H2O+e)=14.03(830 mV)
****
Cl- HL Chloride CAS 7647-01-0 (50)
Chloride;

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

Cr(V) nmr non-aq 25°C 100% U 1977GGa (4675) 5
K(Ph4AsCrClO4+Cl)=1.6
K(Et4NCrClO4+Cl)=2.4
Medium: CH2Cl2, method: e.s.r.

****

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
Cr(V)	gl	NaClO4	21°C	1.0M	C		1998FLa (18845)		6
							K(CrOLA+H2L=CrOL2+H2A)=-0.96		
							K(CrOL2+H2L=CrO(HL)L2+H)=0.26		
							K(CrOL2+H2O=CrO(OH)L2+H)=-3.22		
							K(CrOL2+H2O=CrO(H2O)L2)=-1.20		

Medium: 1 M HClO4/NaClO4, pH=0-1.5. HA: 2-ethyl-2-hydroxybutanoic acid.
K(2CrO(H2O)L2=dimer)=-5.62. Dimer is CrO2L(O)2CrO(H2O)L.

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(V)	nmr	non-aq	25°C	100%	U	M		1977GGa (36611)	7
							K(CrClO4+L)=2.2		

Medium: CH2Cl2, method: e.s.r.

****

C5H10O3 HL CAS 3739-30-8 (3612)
2-Hydroxy-2-methylbutanoic acid, Methylethylglycolic acid; CH3.CH2.C(OH)(CH3)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(V)	sp	NaClO4	25°C	1.00M	U			1997CLa (40249)	8
							Keff(CrOL2+2A=CrOA2+2L)=5.78		
							Keff(CrOL2+2B=CrOB2+2L)=3.48		
							Keff(CrOL2+2C=CrOC2+2L)=0.08		

Cr=CrIV. Keff at pH 3.8. A=oxalate, B=2-Pyridinecarboxylate, C=1,3,4,5-Tetra
hydroxycyclohexanecarboxylate. Data for L exchange with other carboxylates.

****

C6H18N3OP L HMPA CAS 680-31-9 (603)
Hexamethylphosphoramide, Tris-(dimethylamino)phosphine oxide;((CH3)2N)3PO

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(V)	nmr	non-aq	25°C	100%	U			1977GGa (51979)	9
							K(CrCl4O+L)=2.66		

Medium: CH2Cl2, method: e.s.r.

****

C18H15OP L CAS 791-28-6 (32)
Triphenylphosphine oxide; (C6H5)3PO

```
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr(V)      nmr non-aq 25°C 100%  U    M                    1977GGa (97094)  10
                                          K(CrCl4O+L)=0.5
Medium: CH2Cl2, method: e.s.r.
********************************************************************************
e-                    HL    Electron           (442)
Electron;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr(VI)     sp  NaClO4  0°C 0.20M U  I                     1973BQa   (426)  11
                                          K=-12.6
K: HCrO6- + 3/2H2O2=CrO8--- + 2H+ + H2O; K=-10.8(I=1), -13.9(medium:varied)
--------------------------------------------------------------------------------
Cr(VI)     oth none   25°C  0.0  U                      1952LAb   (427)  12
                                          K=67.6(1330 mV)
K: 0.5Cr2O7+7H+3e=Cr(III)+3.5H2O. From thermodynamic data
--------------------------------------------------------------------------------
Cr(VI)     oth none   25°C  0.0  U                      1952LAb   (428)  13
                                          K=-6.9(-130 mV)
K: CrO4+4H2O+3e=Cr(OH)3(s,hydr)+5OH. From thermodynamic data
--------------------------------------------------------------------------------
Cr(VI)     EMF oth/un 25°C  dil  U                      1939DBa   (429)  14
                                          K=60.6(1195 mV)
K: HCrO4+7H+3e=Cr(III)+4H2O
********************************************************************************
BrO3-                 HL    Bromate            (6017)
Bromate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr(VI)     kin non-aq 260°C 100%  U                      1969SCa  (2407)  15
                                          K=-2.26
Medium: (Na,K)NO3. K: Cr2O7+L=2CrO4+BrO2
********************************************************************************
Cl-                   HL    Chloride         CAS 7647-01-0  (50)
Chloride;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr(VI)     sp  NaCl   25°C 3.00M U                      1987MSb  (4676)  16
                                          B(HCrO4+H+L=CrO3L+H2O)=1.37
--------------------------------------------------------------------------------
Cr(VI)     sp  NaClO4 35°C  1.0M U T H                  1966TJa  (4677)  17
                                          K(HCrO4+Cl+H=CrO3Cl+H2O)=1.09
Medium: LiClO4. K=1.04(15 C),1.05(25 C). DH=4.6 kJ mol-1, DS=36 J K-1 mol-1
--------------------------------------------------------------------------------
Cr(VI)     sp  KCl    25°C  var  U                      1964HRa  (4678)  18
```

K(H2CrO4+Cl=CrO3Cl+H2O)=2.0
K(HCrO4+Cl+H=CrO3Cl+H2O)=1.2
Medium:HCl

Cr(VI) sp NaClO4 20°C 1.0M U 1962LUa (4679) 19
K(H+HCrO4+Cl=CrO3Cl+H2O)=0.93

Cr(VI) sp mixed 0°C 87% U 1952CWa (4680) 20
K(H+HCrO4+Cl=CrO3Cl+H2O)=5.05
Medium: 86.5% CH3COOH
****
ClO3- HL Chlorate CAS 7790-93-4 (971)
Chlorate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) kin non-aq 260°C 100% U 1965SCe (6031) 21
Medium:(Na/K)NO3 eutectic. K(ClO3+Cr2O7=ClO2+2CrO4)=-9.80
****
F- HL Fluoride CAS 7644-39-3 (201)
Fluoride;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) con non-aq -5°C 100% U 1960NVa (6815) 22
K(CrO3(+2HF)=CrO2F2+H20)=0.22
Medium: liquid HF, m units
****
HPO3-- H2L Phosphite CAS 13598-36-2 (6305)
Phosphite;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) sp NaClO4 25°C 1.0M U 1968HRd (7505) 23
K=1.2
Medium: HClO4. K: HCrO4+H3PO3=O3CrOPHOOH+H2O

Cr(VI) sp oth/un 25°C var U 1965PHa (7506) 24
K(HCrO4+H2L)=1.42
K(HCrO4+HL)=0.85
****
H2PO2- HL Hypophosphite CAS 6303-21-5 (6304)
Hypophosphite;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) kin NaClO4 25°C 1.0M U 1968HRd (7638) 25
K=1.04
Medium: HClO4. K: HCrO4+H3PO2=O3CrOPH2O(?)+H2O
****

O2-- H2L Peroxide CAS 7772-84-1 (2813)
Peroxide; -O.O-

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	oth/un	25°C	var	U			1963FLc (12656)	26
K(H2CrO4+H2L=H2CrO3L+H2O)?=-0.14 to 0.26 and others									
Cr(VI)	sp	alc/w	18°C	80%	U			1959TIa (12657)	27
							K(0.5Cr2O7+2.5H2L)=0.15		
Medium: EtOH. Product violet H2CrO7									
Cr(VI)	sp	NaClO4	10°C	0.09M	U			1957EVa (12658)	28
K(HCrO4+2H2L+H=CrO5(blue)+3H2O)=7.73									
Cr(VI)	sp	oth/un	20°C	var	U			1937RUa (12659)	29
							K(CrO4+2H2L=blue HCrO5)=4.37		

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	KNO3	25°C	1.50M	U	M		1970MKb (13150)	30
							K(HCrO4+H2L=HCrPO7+H2O)=0.78		
Cr(VI)	sp	NaClO4	25°C	3.0M	U			1968FBb (13151)	31
							K(HCrO4+H2L=HLCrO3+H2O)=0.8		
Cr(VI)	sp	NaClO4	25°C	0.25M	U			1952HOa (13152)	32
							K(HCrO4+H2L=HCrPO7+H2O)=0.48		
							K(HCrO4+H3L=H2CrPO7+H2O)=0.95		

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	NaClO4	25°C	0.15M	U			1969NBb (14884)	33
							K(HCrO4+HL=CrO3L+H2O)=0.96		
Kinetics also used									

****

SO3-- H2L Sulfite CAS 7782-99-2 (801)
Sulfite;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	kin	oth/un	25°C	0.50M	U			1965HPb (15443)	34
							K(HCrO4+HSO3)=1.56		
Medium: CH3CO2Na									

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	oth/un	25°C	3.0M	U	H	K(CrO4+HL)=0.61	1964HRa (16119)	35

Medium: (Na,HL). 15-35 C: DH(K1)=0.0 kJ mol-1, DS=11.3 J K-1 mol-1
****
S2O3-- H2L Thiosulfate CAS 73686-28-7 (177)
Thiosulfate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	NaClO4	25°C	0.11M	U		K(HCrO4+HL=O3CrL+H2O)=4.03	1972MHb (16826)	36

By kinetics, I=0.11: K=3.97

Cr(VI)	sp	NaClO4	25°C	0.10M	U	T	K(HCrO4+HL=O3CrL+H2O)=4.18	1969BAb (16827)	37

K(HCrO4+HL=O3CrSSO3+H2O)=4.34(12 C), 4.31(15.1 C), 4.25(20.1 C),
4.22(24.8 C), 4.22(29.8 C), 4.11(34.5 C). Kinetics also used

Cr(VI)	sp	NaClO4	20°C	0.11M	U		K(HCrO4+HL)=4.09	1968BNe (16828)	38

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	NaClO4	25°C	1.00M	C	T H	K(HCrO4+H+L=CrO3L+H2O)=2.58	1975OMa (17819)	39

Method: stopped-flow spectrophotometry. Data for 15-35 C. DH(HCrO4+H+L)=
-41 kJ mol-1, DS(HCrO4+H+L)=-88 J K-1 mol-1.
****
C3H6N2S L CAS 96-45-7 (386)
2-Imidazolidinethione; C3H6N2(:S)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	NaClO4	25°C	1.00M	C	T H	K(HCrO4+H+L=CrO3L+H2O)=2.32	1975OMa (24834)	40

Method: stopped-flow spectrophotometry. Data for 15 and 20 C.
DH(HCrO4+H+L) -37 kJ mol-1, DS(HCrO4+H+L)=-80 J K-1 mol-1.
****
C3H7NO2S H2L Cysteine CAS 52-90-4 (96)
2-Amino-3-mercaptopropanoic acid; H2N.CH(CH2.SH)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	NaClO4	25°C	1.0M	C	T H		1975MMf (26763)	41
							K(HCrO4+H2L=(HL)CrO3+H2O)=3.01		

Method: stopped-flow spectrophotometry. Data for 15-35 C.
DH(HCrO4+H2L)=-21 kJ mol-1, DS(HCrO4+H2L)=-13 J K-1 mol-1.

****

C3H8O3 L Glycerol CAS 56-81-5 (2707)
Propane-1,2,3-triol; HO.CH2.CH(OH).CH2.OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	sp	oth/un	25°C	0.10M	U	T		1967RBb (27725)	42
							K(HCrO4+L)=14.0		

K=11.6(35 C)

****

C9H7N L CAS 91-22-5 (1538)
Quinoline;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	EMF	NaClO4	26°C	0.10M	U			1972TRa (64057)	43
							K(HCrO4+HL=H2CrO6L)=2.32		

****

C9H7NO4S H2L Sulfoxine CAS 84-88-8 (448)
8-Hydroxyquinoline-5-sulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr(VI)	gl	KNO3	17°C	0.10M	U			1969GTa (64528)	44
							K(CrO4+L+2H=CrO3L)=17.43		

****

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
Cr(VI)	EMF	NaClO4	26°C	0.10M	U			1972TRa (69537)	45
							K(HCrO4+HL)=1.55		

****

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
Cr(VI)	sp	oth/un	25°C	?	U			1964SDa (86721)	46
							K(?)=4.6		
Cr(VI)	sp	oth/un	25°C	?	U			1961BDa (86722)	47
							K(?)=4.72		

Cr(VI) sp oth/un 25°C ? U K1=4.7 1959DBb (86723) 48
****
C15H11N3O4S H2L (5130)
7-Phenylazo-8-hydroxyquinoline-5-sulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) gl KNO3 16°C 0.10M U 1969GTa (91335) 49
B((CrO4)H2L)=16.78
****
C15H11N3O7S2 H3L CAS 17852-90-3 (5131)
7-(4-Sulfophenylazo)-8-hydroxyquinoline-5-sulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) gl KNO3 16°C 0.10M U 1969GTa (91348) 50
B((CrO4)H2L)=16.80
****
C19H13N3O7S2 H3L SNAZOXS CAS 117-87-3 (995)
8-Hydroxy-7-(4'-sulfo-1'-naphthylazo)-quinoline-5-sulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) gl KNO3 16°C 0.10M U 1969GTa (99046) 51
K(CrO4+L+2H)=16.77
****
C60H70N6O8 H2L CAS 606922-00-3 (9131)
5,11,17,23-Tetra-t-butyl-25,27-bis(isoniazidylcarbonylmethoxy)-26,28-dihydrocalix[4
]arene;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr(VI) dis non-aq 25°C 100% C 2003TMa (107641) 52
Method: extraction of CrO7-- into CH2Cl2.
K(Cr2O7+LH2(org)=(Cr2O7)LH2(org))=3.18.
****
NO L Nitric oxide CAS 10102-43-9 (850)
Nitric oxide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+ sp NaClO4 25°C 1.0M C 1990JGa (9292) 53
*K(Cr(NO)(H2O)5)=-4.8
****
C5H6 HL Cyclopentadiene CAS 542-92-7 (4288)
Cyclopentadiene; cyclo(-CH:CH.CH2.CH:CH-)

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

```
Cr+        sp  non-aq -38°C 100%  U T HM                1992WJb (37074)  54
                                        K((CrL(CO)2B)2=2CrL(CO)2B)=5.1
Method:IR. Medium:THF. -75 to -38 C. K=3.18(-75C); 3.66(-66C);3.96
(-61C); 4.29(-55C); 4.64(-49C); 4.97(-43C). DH=49.0 kJ mol-1; DS=176.
--------------------------------------------------------------------------------
Cr+        sp  non-aq  0°C 100%  U T HM                1992WJb (37075)  55
Method:IR. Medium:toluene. 10-65 C. DH values also for similar ligands.
DH(CrL(CO)3)2=2CrL(CO)3=61.5 kJ mol-1; DS=147
********************************************************************************
e-                    HL    Electron           (442)
Electron;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr++       oth none   25°C  0.0  U                       1952LAb   (430)  56
                                        K(Cr+2e=Cr(s))=-30.9(-910 mV)
From thermodynamic data
--------------------------------------------------------------------------------
Cr++       EMF none   19°C  0.0  U                       1927GBb   (431)  57
                                        K(Cr+2e)=-19.2(-557 mV,?)
********************************************************************************
Br-                   HL    Bromide          CAS 10035-10-6  (19)
Bromide;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr++       vlt oth/un 25°C  var  U                       1984WRd  (1863)  58
                                        K(Cr(II)+L=Cr(III)L+e)=-2.68
********************************************************************************
CN-                   HL    Cyanide          CAS 74-90-8  (230)
Cyanide;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr++       kin NaClO4 25°C 1.00M U        K1=0.98        1970DSa  (2627)  59
Aditional Method: spectrophotometry
--------------------------------------------------------------------------------
Cr++       kin oth/un 27°C  var  U    M                  1968BGc  (2628)  60
                                        K(H+Cr(NO)L2(H2O)3)=1.2
                                        K(H+Cr(NO)L(H2O)4)=0.7
--------------------------------------------------------------------------------
Cr++       cal oth/un 25°C  var  U   H                   1964GHc  (2629)  61
DH(B6)=-264.2 kJ mol-1
--------------------------------------------------------------------------------
Cr++       cal oth/un 25°C    ?  U   H                   1961GUa  (2630)  62
DH(B6)=-275.7 kJ mol-1
********************************************************************************
Cl-                   HL    Chloride         CAS 7647-01-0  (50)
Chloride;
--------------------------------------------------------------------------------
```

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	vlt	oth/un	25°C	var	U			1984WRd (4681)	63
							K(Cr(II)+L=Cr(III)L+e)=-1.06		
Cr++	kin	NaClO4	25°C	1.0M	U			1969SSd (4682)	64
							K(Cr+RuCl=RuCrCl)=3.9		

Medium: HClO4

****

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

Iodide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	vlt	oth/un	25°C	var	U			1984WRd (7962)	65
							K(Cr(II)+L=Cr(III)L+e)=-4.96		

****

NH3O L Hydroxylamine; CAS 5470-11-1 (1808)

Hydroxylamine; NH2.OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	kin	NaClO4	25°C	1.0M	U			1968WSd (9262)	66
							K(CrCl+L)=0.18		

****

NO L Nitric oxide CAS 10102-43-9 (850)

Nitric oxide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	EMF	NaCl	18°C	1.0M	U			1969BEd (9293)	67
							K(Cr(CN)5NO+H)=2.95		

****

N2H4 L Hydrazine CAS 302-01-2 (2117)

Hydrazine; H2N.NH2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	kin	NaClO4	25°C	1.0M	U			1968WSc (10079)	68
							K(CrCl+L)=0.16		

****

N3- HL Azide CAS 7782-79-8 (441)

Azide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	kin	NaClO4	25°C	1.0M	U	T H		1968WSd (10194)	69
							K(CrSO4+L)=0.61		
							K(CrF+L)=0.86		
							K(CrCl+HL)=0.16		

K(CrBr+HL)=-0.64
Data 0-25 C. DH(CrSO4+L)=-31.4 kJ mol-1,DS=-96.1 J K-1 mol-1;DH(CrF+L)=-12.5
DS=-29.3; DH(CrCl+HL)=-50.2, DS=-167; DH(CrBr+HL)=-54.3, DS=-197
****
OH- HL Hydroxide (57)
Hydroxide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl oth/un 25°C 1.0M M 1992WRa (11190) 70
*K1=-8.2
Medium: 1.0 M CF3SO3Na.

Cr++ gl KCl 25°C 1.00M C 1983MDb (11191) 71
*K1=-5.3

Cr++ sp diox/w 25°C 20% U I M 1967CHb (11192) 72
K(Cr(en)3+L)=1.40
Medium: 20% dioxan/H2O. K=0.8(0%), 1.85(30%), 2.48(40%)

Cr++ gl oth/un ?25 dil U 1947HKa (11193) 73
Kso(Cr(OH)2)=-17.00

Cr++ EMF oth/un 18°C var C 1932BEa (11194) 74
Kso(Cr(OH)2)=-19.7
Method: H electrode
****
O2-- H2L Peroxide CAS 7772-84-1 (2813)
Peroxide; -O.O-

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ kin NaClO4 25°C 1.0M U 1970DSa (12660) 75
K(Cr(CN)5+HL=Cr(CN)4)HL)=1.5
****
SCN- HL Thiocyanate CAS 463-56-9 (106)
Thiocyanate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ sp none 25°C 0.0 U K1=1.09 B2=0.77 1958YFa (14885) 76
****
CH2O2 HL Formic acid CAS 64-18-6 (37)
Methanoic acid; H.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ sp oth/un 25°C 1.45M C 1977AMc (17603) 77
K(2CrL+L=Cr2L3)=0.32
Sodium formate medium

****

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
Cr++	oth	NaClO4	40°C	0.10M	C	M	B2=7.57 B(CrL(nta))=9.69	1984SIa (18846)	78

Method: Paper electrophoresis, pH 10.0.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	vlt	NaClO4	20°C	0.10M	U		K1=3.7 B2=5.9	1975BUa (18847)	79
Cr++	gl	NaClO4	25°C	0.10M	U		K1=3.85 B2=6.81	1970FKa (18848)	80

****

C2H4O2 HL Acetic acid CAS 64-19-7 (36)
Ethanoic acid; CH3.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	sp	NaClO4	25°C	1.00M	U		B2=1.70 K(2CrL2=Cr2L4)=4.35	1976CGa (19928)	81
Cr++	kin	NaClO4	25°C	1.0M	C		K(2CrL=Cr2L2)=3.3	1975CSc (19929)	82
Cr++	oth	oth/un	?	0.0	U		K1=1.80 B2=2.92	1956YFa (19930)	83

****

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
Cr++	gl	KCl	25°C	1.00M	C	T	K1=4.21 B2=7.27	1983MDb (21517)	84
Cr++	gl	NaClO4	25°C	0.10M	U		K1=7.72 B2=15.26	1970FKa (21518)	85

****

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
Cr++	gl	KCl	25°C	1.00M	C		K1=5.48 B2=9.63	1983MDb (23136)	86
Cr++	gl	oth/un	25°C	1.40M	U		K1=5.15 B2=9.19	1957PBa (23137)	87

****

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

```
Cr++       gl  KCl    25°C 1.00M C        K1=3.57   B2=5.49   1983MDb (24419)  88
                                          B(CrHL)=6.45
-------------------------------------------------------------------------------
Cr++       sp  NaClO4 25°C 1.00M U        B2=6.0         1982CGa (24420)  89
-------------------------------------------------------------------------------
Cr++       gl  NaClO4 25°C 0.10M U        K1=3.92   B2=7.13   1970FKa (24421)  90
*******************************************************************************
C3H4O5                H2L    Tartronic acid   CAS 80-69-3  (839)
Hydroxypropanedioic acid; HO.CH(COOH)2
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr++       gl  KCl    25°C 1.00M C        K1=3.86   B2=5.94   1986MNa (24616)  91
                                          B(CrHL)=6.17
*******************************************************************************
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
-------------------------------------------------------------------------------
Cr++       gl  NaClO4 25°C 1.00M U T      K1=3.30   B2=5.70   1975TRa (25426)  92
                                          B3=8.40
Values also at 35 C, 45 C
*******************************************************************************
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
-------------------------------------------------------------------------------
Cr++       gl  KCl    25°C 1.00M C      T K1=3.89        1983MDb (26451)  93
-------------------------------------------------------------------------------
Cr++       gl  NaClO4 25°C 0.10M U        K1=7.53        1970FKa (26452)  94
*******************************************************************************
C4H6O4S               H2L    Thiodiacetic     CAS 123-93-3  (140)
2,2'-Thiodiglycolic acid, Thiodiethanoic acid; HOOC.CH2.S.CH2.COOH
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr++       gl  NaClO4 25°C 0.10M U        K1=3.00   B2=5.39   1970PPa (30212)  95
*******************************************************************************
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
-------------------------------------------------------------------------------
Cr++       gl  KCl    25°C 1.00M C        K1=2.04        1986MNa (31224)  96
                                          B(CrHL)=5.55
*******************************************************************************
C4H7NO2                HL                     CAS 57-71-6  (6204)
But-2,3-dione monoxime; CH3.CO.C(:NOH).CH3
```

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl alc/w 25°C 75% U K1=7.9 B2=13.30 1986BTa (31454) 97
K3=4.2
Medium: 75% MeOH/H2O, 0.1 M NaClO4
****
C4H7NO4 H2L Aspartic acid CAS 56-84-8 (21)
Aminobutanedioic acid; H2N.CH(CH2.COOH).COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl KCl 25°C 1.00M C K1=4.67 B2=8.13 1986MNa (31838) 98
B(CrHL)=10.63
****
C4H7NO4 H2L IDA CAS 142-73-4 (118)
Iminodiethanoic acid; HN(CH2.COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl KCl 25°C 1.00M C K1=5.01 B2=8.18 1983MDb (32214) 99
****
C4H8N2O3 HL Gly-Gly CAS 556-50-3 (54)
Glycyl-glycine; H2N.CH2.CO.NH.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl KCl 25°C 1.00M C K1=2.15 1986MNa (33021) 100
B(CrHL)=10.09
****
C4H13N3 L Dien CAS 111-40-0 (584)
1,4,7-Triazaheptane, 2,2'Iminobis(ethylamine), diethylenetriamine;
NH2.(CH2)2.NH.(CH2)2.NH2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl KCl 25°C 1.00M C K1=6.67 B2=9.35 1986MNa (35769) 101

Cr++ gl KCl 26°C 0.10M U T K1=6.78 B2=9.38 1965PGa (35770) 102
At 20 C: K1=6.71, K2=2.69
****
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
---
Cr++ gl KCl 25°C 1.00M U K1=5.96 B2=11.70 1965SMc (37932) 103
****
C5H9NO2 HL CAS 14401-90-2 (6205)
Pent-2,4-dione monoxime; CH3.CO.CH2.C(:NOH).CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl alc/w 25°C 75% U K1=7.5 B2=12.30 1986BTa (38471) 104
K3=3.8
Medium: 75% MeOH/H2O, 0.1 M NaClO4
****
C5H9NO4 H2L Glutamic acid CAS 56-86-0 (22)
2-Aminopentanedioic acid; H2N.CH(CH2.CH2.COOH)COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl KCl 25°C 1.00M C K1=4.53 B2=7.49 1986MNa (39075) 105
B(CrHL)=11.02
****
C5H9NO4 H2L MIDA CAS 4408-64-4 (190)
N-Methyliminodiethanoic acid; CH3.N(CH2.COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ gl KCl 25°C 1.00M C K1=5.42 B2=8.70 1986MNa (39244) 106

Cr++ sp NaClO4 25°C 1.00M U B2=12.3 1982CGa (39245) 107

Cr++ sp none 25°C 0.0 U 1976BDa (39246) 108
K(CrL2+H)=2.39
K(CrL+HL)=0.74
****
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
---
Cr++ sp NaClO4 25°C 0.50M U K1=5.96 1966MPb (42510) 109
****
C6H5NO2 HL Isonicotinic ac CAS 55-22-1 (1639)
4-Pyridine-carboxylic acid; C5H4N.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr++ sp oth/un 25°C dil U K1=3.37 1971CAa (42697) 110
pH=2
****
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
---
Cr++ gl KCl 25°C 1.00M C K1=6.52 B2=9.66 1983MDb (46754) 111
B(Cr2L)=8.54

****

C6H10O4S2 H2L CAS 7244-02-2 (438)
1,2-Bis(carboxymethylthio)ethane; HOOC.CH2.S.CH2.CH2.S.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr++	gl	NaClO4	25°C	0.10M	U		K1=1.99		1971PPb (48235)	112

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr++	vlt	NaClO4	25°C	0.10M	U		K1=7.73	B2=14.61	1969VPa (48708)	113

****

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
Cr++	gl	KCl	25°C	1.00M	C		K1=7.86	B2=10.04	1986MNa (49228)	114
Cr++	sp	NaClO4	25°C	1.00M	U		K1=9.1		1982CGa (49229)	115

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr++	gl	KCl	25°C	1.00M	C		K1=7.33		1986MNa (52093)	116

****

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
Cr++	gl	NaClO4	25°C	0.10M	U		K1=9.89		1970FKa (54961)	117

****

C7H9NO3S2 HL (940)
2-(Thiophene-2-aldimino)ethane sulfonic acid; C4H3S.CH:N.CH2.CH2.SO3H

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr++	gl	NaClO4	25°C	0.10M	U		K1=4.31	B2=7.91	1982MSa (56456)	118

****

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

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

```
Cr++       gl  KCl    25°C 1.00M C        K1=2.48        1986MNa (58961) 119
**************************************************************************
C8H13NO6S             H3L                        (5675)
2-Mercapto-1-aminoethane-N,N,S-triethanoic acid; HOOC.CH2.S.CH2.CH2.N(CH2COOH)2
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr++       gl  NaClO4 25°C 0.10M U        K1=8.23        1975POa (61821) 120
                                         K(Cr+HL)=1.9
**************************************************************************
C8H14O4S3             H2L                        (2526)
3,6,9-Trithiaundecanedioic acid; HOOC.CH2.S.C2H4.S.C2H4.S.CH2.COOH
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr++       gl  NaClO4 25°C 0.10M U        K1=2.33        1971PPc (62121) 121
**************************************************************************
C9H9NO2                HL                      CAS 25355-34-4  (6206)
1-Phenyl-prop-1,2-dione monoxime; C6H5.CO.C(:NOH).CH3
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr++       gl  alc/w  25°C  75%  U        K1=9.3    B2=16.10  1986BTa (65035) 122
                                         K3=3.5
Medium: 75% MeOH/H2O, 0.1 M NaClO4
**************************************************************************
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
--------------------------------------------------------------------------
Cr++       sp  non-aq 25°C 100%  U        K1=4.61        1981AWa (69538) 123
Medium: hexamethylphosphoric triamide
--------------------------------------------------------------------------
Cr++       kin oth/un 25°C 0.45M U        K1=4.88        1970DIa (69539) 124
**************************************************************************
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
--------------------------------------------------------------------------
Cr++       kin NaClO4 25°C  1.0M U                       1987SEa (73672) 125
                                         K(CrL+H)=5.5
                                         K(CrHL+H)=2.7
--------------------------------------------------------------------------
Cr++       gl  KCl    25°C 1.00M C        K1=12.7        1983MDb (73673) 126
                                         B(CrHL)=16.18
--------------------------------------------------------------------------
Cr++       vlt oth/un 25°C 0.10M U                       1974TKb (73674) 127
                                         K(CrL+H)=3.40
```

I=0.1 M acetate pH 4.9

Cr++	vlt	NaCl	?	2.50M	U	K1=13.61	1968FDa (73675) 128

Cr++	gl	KCl	20°C	0.10M	U	K1=13.61	1964PSc (73676) 129
						K(CrL+H)=3.00	

****

C11H9NO3S2 HL (939)
2-(Thiophene-2'-aldimino)benzene sulfonic acid; C4H3S.CH:N.C6H4.SO3H

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	gl	NaClO4	25°C	0.10M	U		K1=4.08 B2=6.83	1982MSa (77399)	130

****

C11H18N2O8 H4L CAS 4408-81-5 (923)
1,3-Diaminopropane-N,N,N',N'-tetraethanoic acid; ((HOOC.CH2)2N.CH2.)2.CH2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	vlt	oth/un	25°C	0.10M	U			1974TKb (79433)	131
							K(CrL+H)=5.38		

I=0.1 M acetate pH 4.9

****

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
Cr++	vlt	oth/un	25°C	0.10M	U			1974TKb (88619)	132
							K(CrL+H)=4.30		

I=0.1 M acetate pH 4.9

****

C15H12O2 HL CAS 1214-47-7 (951)
3-Phenyl-1-(2'-hydroxyphenyl)-2-propen-1-one, 2'-hydroxychalkone;
C6H5.CH:CH.CO.C6H4.OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr++	gl	diox/w	30°C	60%	U		K1=11.55 B2=20.95	1975KKc (91580)	133

****

e- HL Electron (442)
Electron;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	EMF	NaCl	25°C	1.00M	C			1975BRa (432)	134
							E(e + Cr+++)=-0.429V		
Cr+++	EMF	NaClO4	25°C	1.00M	U			1970DSa (433)	135
							K=-23.5(-1.39V)		

K=Cr(CN)6--- + e=Cr(CN)6----

Cr+++ oth none 25°C 0.0 U 1952LAb (434) 136
K(Cr+3e=Cr(s))=-37.7(-740 mV)

Cr+++ vlt oth/un 25°C 1.0M U I 1943HKa (435) 137
K=-19.3(-1140 mV)
K: Cr(CN)6+e=Cr(CN)6----. At I=0 corr: K=-21.6(-1280 mV)

Cr+++ EMF oth/un 18°C dil U 1926GSa (436) 138
K=-6.9 to -7.9(-398 to -454mV)
K: Cr+e=Cr(II)

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	oth/un	22°C	var	U	M	K(Cr(NH3)5+HL)=3.35 K(cis-Cr(en)2+HL)=3.6	1960BHf (1135)	139
Cr+++	sol	oth/un	22°C	var	U		Kso(CrL)=-20.11	1956CHc (1136)	140

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	kin	oth/un	25°C	1.0M	C	H	Kout(cis-CrA(OH)Cl+Br)=-0.80 Kout(trans-CrB(OH)Cl+Br)=-0.33	2002MMa (1864)	141

A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso isomer. For cis-CrA(OH)Cl, DH=52 kJ mol-1; trans-CrB(OH)Cl, DH=24. NaBr.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	kin	oth/un	25°C	1.0M	C	H	Kout(cis-CrA(OH)N3+Br)=-0.66 Kout(trans-CrB(OH)N3+Br)=-0.33	2002MMa (1865)	142

A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso isomer. For cis-CrA(OH)N3, DH=11 kJ mol-1; trans-CrB(OH)N3, DH=7. NaBr.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	kin	oth/un	25°C	1.0M	C	H	Kout(cis-CrA(OH)NCS+L)=-0.55 Kout(trans-CrB(OH)NCS+L)=-0.28	2002MMa (1866)	143

A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso isomer. For cis-CrA(OH)N3, DH=3 kJ mol-1; trans-CrB(OH)N3, DH=-8. NaBr.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	oth/un	25°C	var.	U		K1=-2.5 B2=-6.00 K3=-4.4	1991BBb (1867)	144

Medium: LiBr (I<=11M)

Cr+++ sol oth/un 25°C 0.25M C 1984BPd (1868) 145
Kout(Cr(phen)3+L)= 0.72
Medium:NaF; Also for I=0.5 M K1out=0.55, for 0.75 M K1out=0.53
phen=phenantroline

Cr+++ sol NaClO4 25°C 0.1M C 1977MSg (1869) 146
Kout(Cr(NH3)6+L)=0.72
For I=0.5 M Kout=0.08
For I=0.1 M and spectrophotometric method Kout=0.76

Cr+++ cal oth/un 25°C 0.50M C H 1976DHb (1870) 147
Medium: 0.50 M HClO4. DH(Cr+Br=CrBr)=37.4 kJ mol-1.
Method: enthalpy of oxidation of CrBr with Ce(IV).

Cr+++ ix NaClO4 50°C 1.00M U M 1976RSc (1871) 148
K(Cr(NH3)5(H2O)+L)=-0.68
By kinetics: K=-0.52

Cr+++ con non-aq 25°C 100% U 1971PWb (1872) 149
K1(cis-Cr(en)2Cl2+L)=2.09
K1(trans-Cr(en)2Cl2+L)=1.1
K1(cis-Cr(en)2ClBr+L)=2.00
K1(trans-Cr(en)2ClBr+L)=1.82
Medium: DMSO. Also in DMF and acetamide, and with SCN and NO2 cplxs
---
Cr+++ ix NaClO4 25°C 2.0M U T H K1=-2.65 1960EKa (1873) 150
Method: cation exchange. K1=-3.01(0 C), -2.54(34.7 C), -2.43(45.2 C).
-H(K1)=21.4 kJ mol-1. DS=20.4 J K-1 mol-1(25 C)

Cr+++ cal oth/un ? 0.0 U H 1890REa (1874) 151
DH(B2)=48.1 kJ mol-1
****
CN- HL Cyanide CAS 74-90-8 (230)
Cyanide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ vlt NaClO4 25°C 1.0M U M 1972FAa (2631) 152
K(Cr(NC)=Cr(CN))=-2.3
K(Cr(CN)+H)=1.3
K(Cr(CN)+H)=1.5(2 C)

Cr+++ oth oth/un 25°C 1.00M U 1971JFb (2632) 153
K(CrL6+OH=Cr(CN)5OH+L)=-0.1
Method: Chemical analysis

Cr+++ sp NaClO4 25°C 2.0M U T 1971WSb (2633) 154
K(1,2,3-Cr(H2O)3L2+H)=0.04

K=-0.05(15 C)

Cr+++ kin NaCl 18°C 1.00M U 1969BEd (2634) 155
K(Cr(CN)5NO+H)=2.95

Cr+++ kin NaClO4 25°C 2.0M U TI 1969WSa (2635) 156
K(Cr(H2O)5L+H)=0.73
K=0.60 (35-40 C, I=2), 0.85(I=1.5, 25 C), 0.73(I=2.1, 25C)

Cr+++ kin NaClO4 25°C 2.0M U T 1969WSb (2636) 157
K(cis-Cr(H2O)4L2+H)=0.68
K=0.72(15 C), 0.59(35 C). By spectrophotometry, K=0.43(15 C), 0.26(25 C), 0.15(35 C)

Cr+++ sp oth/un 50°C var U M 1961MAg (2637) 158
K(Cr+Mo(IV)L8)=4.62

****

CO3-- H2L Carbonate CAS 465-79-6 (268)
Carbonate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sol	NaClO4	25°C	3.0M	C		Kout(Cr(en)3+L)=-0.05	1973ULa (3191)	159

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	kin	NaCl	25°C	1.0M	C	H	Kout(cis-CrA(OH)Cl+Cl)=-0.74 Kout(trans-CrB(OH)Cl+Cl)=-0.28	2002MMa (4683)	160

A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso isomer. For cis-CrA(OH)Cl, DH=54 kJ mol-1; for trans-CrB(OH)Cl, DH=22

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	kin	NaCl	25°C	1.0M	C	H	Kout(cis-CrA(OH)NCS+L)=-0.54 Kout(trans-CrB(OH)NCS+L)=-0.27	2002MMa (4684)	161

A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso isomer. For cis-CrA(OH)NCS, DH=5 kJ mol-1; trans-CrB(OH)NCS, DH=2.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	kin	NaCl	25°C	1.0M	C	H	Kout(cis-CrA(OH)N3+Cl)=-0.57 Kout(trans-CrB(OH)N3+Cl)=-0.25	2002MMa (4685)	162

A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso isomer. For cis-CrA(OH)N3, DH=11 kJ mol-1; trans-CrB(OH)N3, DH=6.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	nmr	non-aq	20°C	100%	U	T HM	K(CrAB+CrCL=CrAL+CrCB)=0.491	1992WGa (4686)	163

Medium:benzene. T=10-40C. A:meso-tetra-p-tolylporphyrin. B:(=O) C:octaethyl-porphyrin. K=0.568(10C); 0.431(30C); 0.415(40C). DH=-8.4 kJ mol-1; DS=-19

Cr+++ sp oth/un 25°C ? U K1=-1.20 B2=-3.27 1990BBb (4687) 164
K3=-3.16
In LiCl (I<=12.5 M)

Cr+++ kin oth/un 25°C 1.0M C T H 1985MMf (4688) 165
K(cis-CrA(H2O)2+Cl)=0.64
Medium: 1.0 M HClO4. A is rac-5,5,7,12,12,14-hexamethyl-1,4,8,11-tetraaza-cyclotetradecane. At 39.7 C K=0.69. DH(K)=6 kJ mol-1, DS(K)=32 J K-1 mol-1

Cr+++ sol oth/un 25°C 0.25M C 1984BPd (4689) 166
Kout(Cr(phen)3+L)= 0.54
Madium: NaF; Also for I=0.5 M K1out=0.36, for 0.75 M K1out=0.29
phen=phenantroline

Cr+++ sol NaClO4 25°C 0.1M C 1977MSg (4690) 167
Kout(Cr(NH3)6+L)=0.86
For I=0.5 M Kout=0.18
For I=0.1 M and spectrophotometric method Kout=0.86

Cr+++ cal oth/un 25°C 0.50M C H 1976DHb (4691) 168
Medium: 0.50 M HClO4. DH(Cr+Cl=CrCl)=26.3 kJ mol-1.
Method: enthalpy of oxidation of CrCl with Ce(IV).

Cr+++ ix NaClO4 50°C 1.00M U M 1976RSc (4692) 169
K(Cr(NH3)5(H2O)+L)=-0.32
By kinetics: K=-0.40

Cr+++ sp KCl rt var U B2=-1.1 1971KGa (4693) 170
K(CrCl2+3H+4Cl=H3CrCl6)=6.43
Medium: HCl

Cr+++ con non-aq 25°C 100% U TI 1971PWb (4694) 171
K(cis-Cr(en)2L2+L)=2.47
K(trans-Cr(en)2L2+L)=1.40
Medium: DMSO. K(cis)=2.45(30 C), 2.43(35 C). In DMF: K(cis)=3.75(15 C), 3.78(25 C), 3.75(35 C). In acetamide: K(cis)=4.12(25 C)

Cr+++ kin NaClO4 25°C 1.0M U 1971RHa (4695) 172
K(Cr(NH3)4(OH)Cl+H)=-5.8(cis)
K(Cr(NH3)4(OH)Cl+H)=-5.4(trans

Cr+++ kin NaClO4 25°C 0.50M U T 1970BIb (4696) 173
K(Hg(II)+cis-CrCl2)=3.13
K(2Hg(II)+cis=CrCl2)=4.25
Medium: LiClO4.K values at 35 C: 2.51, 3.44

Cr+++ nmr NaClO4 26°C 1.0M U 1970BMc (4697) 174

K1(in)=-0.9
Method: esr

Cr+++ oth NaClO4 25°C 2.50M U K1=-1.24 1968EPb (4698) 175
Method:chemical analysis. Medium: LiClO4

Cr+++ dis NaClO4 40°C 1.0M U T H K1=0.03 1968MHa (4699) 176
K1in=-0.66
Medium: HClO4. K1out=-0.04(10 C), -0.05(20 C), -0.06(30 C), -0.08(50 C).
At 25 C: DH(K1out)=-1.8 kJ mol-1, DS=-7.1 J K-1 mol-1

Cr+++ con non-aq 25°C 100% U T 1968PWa (4700) 177
K(cis-Cr(en)2Cl2+Cl)=2.48
Medium: DMSO. B=2.45(30 C),2.43(35 C),2.28(70 C)

Cr+++ cal NaClO4 25°C 5.10M U H 1967AHa (4701) 178
DS(K1)=79.4 J K-1 mol-1

Cr+++ sp NaClO4 60°C 1.71M U TIH 1967DEb (4702) 179
K(Cr(NH3)5+L)=-0.45
K=-0.7(30 C),-0.55(40 C); DH(K)=25.1 kJ mol-1, DS=67 J K-1 mol-1. In 0.016 M
K1=-0.2(30 C),0.0(45 C),0.1(60 C); DH=25, DS=80. In 0.16 M: K1=0.5

Cr+++ sp NaClO4 0°C 4.40M U K2=-1.82 1967ESb (4703) 180

Cr+++ kin NaClO4 0°C 1.0M U K2=-2.44 1967ESb (4704) 181

Cr+++ sp NaClO4 80°C 10.0M U TIH K1=1.11 1967HKa (4705) 182
Medium: HClO4. K1(H2O)=0.98(60 C), DH=13.0 kJ mol-1, DS=58.5. At I=6.7:
K1(H2O)=0.34(40 C),0.48(60 C),0.63(80 C); DH=15.0, DS=54.3. Also at I=4, 1 M

Cr+++ sp NaClO4 25°C 9.0M U 1967NKa (4706) 183
K3=-0.13
Medium:HClO4

Cr+++ sp non-aq 76°C 100% U 1967PWa (4707) 184
K(cis=trans Cr(en)2Cl2)=-0.32
K1out=3.20(cis)
K1out=2.3(trans)
Medium: DMF

Cr+++ kin NaClO4 40°C 2.0M U K1=-0.65 1966ASb (4708) 185
Medium: LiClO4

Cr+++ ix NaClO4 60°C 0.42M U T K1=-0.49 1964BKa (4709) 186
K1=-0.96(30 C),-0.74(44 C). In 70.6% MeOH:K1=1.22(30 C),1.47(44 C),1.72(60C)

Cr+++ sp NaClO4 25°C 7.0M U 1963JRa (4710) 187
K2=-1.96 (trans)
K2=-1.64 (cis)

```
                                        K(cisCrCl2=transCrCl2)=-0.32
-------------------------------------------------------------------------------
Cr+++      oth KNO3   -3°C  sat  U        K1=0.86        1962FCa  (4711) 188
Method: freezing point
-------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 4.40M U TIH    K1=-0.69       1958GKa  (4712) 189
Medium: HClO4. DH(K1)=26 kJ mol-1,DS=72.0 J K-1 mol-1. K1=-0.62(30 C), -0.19
(64 C),-0.06(85 C),0.16(95 C). Data also in HCl: K1=-0.98,K2=-1.52
-------------------------------------------------------------------------------
Cr+++      cal NaClO4 25°C 5.10M U   H                   1958SKa  (4713) 190
DH(K1)=28 kJ mol-1, DH(K2 trans)=21
-------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  5.0M U TIH    K1=-0.65  B2=-2.19  1956GAb  (4714) 191
                                        K1out=-0.55
Medium:HClO4. DH(K1)=23 kJ mol-1,DS=67;DH(K2)=19,DS=33;DH(K1out)=7.5, DS=15.
I=0 corr.K K1=0.60, K2=-0.71, K1out=0.70. 85 C:K1=0.13,K2=-1.01,K1out=-0.28
-------------------------------------------------------------------------------
Cr+++      con none    5°C  0.0  U        K1=-1.0        1954SHb  (4715) 192
                                        K(CrOH+L)=-2.0
-------------------------------------------------------------------------------
Cr+++      oth NaClO4 25°C  1.0M U  I                   1953CTa  (4716) 193
                                        K1out=0.18
At I=0 corr. K1out=1.11
-------------------------------------------------------------------------------
Cr+++      oth none   25°C  0.0  U        B2=1.9         1921LFa  (4717) 194
Method: chemical analysis
*******************************************************************************
ClO4-                  HL    Perchlorate      CAS 7001-90-3  (287)
Perchlorate;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C  1.0M C   H                   2002MMa  (6194) 195
                                        Kout(cis-CrA(OH)Cl+L)=-0.57
                                        Kout(trans-CrB(OH)Cl+L)=-0.38
A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso
isomer. For cis-CrA(OH)Cl, DH=50 kJ mol-1; trans-CrB(OH)Cl, DH=21.
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C  1.0M C   H                   2002MMa  (6195) 196
                                        Kout(cis-CrA(OH)N3+L)=-0.43
                                        Kout(trans-CrB(OH)N3+L)=-0.38
A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso
isomer. For cis-CrA(OH)N3, DH=11 kJ mol-1; trans-CrB(OH)N3, DH=5.
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C  1.0M C   H                   2002MMa  (6196) 197
                                        Kout(cis-CrA(OH)NCS+L)=-0.33
                                        Kout(trans-CrB(OH)NCS+L)=-0.32
A: rac-5,5,7,12,12-hexamethyl-1,4,8,11-tetraazacyclotetradecane. B is meso
isomer. For cis-CrA(OH)NCS, DH=0 kJ mol-1; trans-CrB(OH)NCS, DH=-2.
-------------------------------------------------------------------------------
```

```
Cr+++      con none   25°C  0.0  U                          1974TKc  (6197) 198
                                        K(Cr(NH3)6+L)=1.2
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 20°C 10.6M U T      K1=-1.48       1965JBa  (6198) 199
Also kinetics. Medium:HClO4. K1=-1.68(9.8 C)
********************************************************************************
CrO4--                H2L    Chromate         CAS 7738-94-5  (2382)
Chromate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      kin NaCl   25°C 0.50M C                          1992GTb  (6483) 200
                                        K(Cr(NH3)5H2O+HL)=0.49
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 1.00M U                          1976STa  (6484) 201
                                        K(Cr(EDTA)+L)=1.89
--------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U                          1976STa  (6485) 202
                                        K(Cr(EDTA)+L)=1.72
********************************************************************************
F-                     HL    Fluoride         CAS 7644-39-3  (201)
Fluoride;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      ISE non-aq 185°C 100%  C        K1=3.72   B2=7.59   1987HJa  (6816) 203
                                        K3=3.04
                                        K4=3.11
Medium: molten KSCN; units of K = mol-1 kg
--------------------------------------------------------------------------------
Cr+++      cal oth/un 25°C 0.50M C   H                      1976DHb  (6817) 204
Medium: 0.50 M HClO4. DH(Cr+HF=CrF+H)=-1.38 kJ mol-1.
Method: enthalpy of oxidation of CrF with Ce(IV).
--------------------------------------------------------------------------------
Cr+++      nmr NaClO4 26°C  1.0M U                          1970BMc  (6818) 205
                                        K1out=1.5
                                        K1in=0.08
Method: esr
--------------------------------------------------------------------------------
Cr+++      ix  NaClO4 95°C  1.0M U T H                      1965SKa  (6819) 206
                                        K(Cr+HL=CrF+H)=1.36
Method:cation exchange.  Medium: LiClO4. K1=1.32(77 C), 1.35(86 C),
DH(K1)=5.4 kJ mol-1, DS=25 J K-1 mol-1
--------------------------------------------------------------------------------
Cr+++      nmr oth/un   ?   var  U    M                     1965SLc  (6820) 207
                                        K(Cr(en)3+F) > 1
                                        K(Cr(en)2Cl2+F)=0.5
--------------------------------------------------------------------------------
Cr+++      sp  none   25°C  0.0  U        K1=5.20          1955PAa  (6821) 208
--------------------------------------------------------------------------------
```

```
Cr+++      sp  NaClO4 25°C 0.50M U        K1=4.36   B2=7.70   1952WTa  (6822) 209
                                        K3=2.48
                                        K(Cr+HF=CrF+H)=1.42
                                        K(CrF+HF=CrF2+H)=0.40
                                        K(CrF2+HF=CrF3+H)=-0.46
*************************************************************************
HPO3--                H2L    Phosphite        CAS 13598-36-2  (6305)
Phosphite;
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      gl  oth/un   ?   var  U                        1962PEc  (7507) 210
                                        B3=11.6
B3=10.5 ? by spec. K(H2CrL3+H)=2.65, K(HCrL3+H)=5.42, K(CrL3+H)=6.44
-------------------------------------------------------------------------
Cr+++      gl  oth/un   ?   var  U                        1961EPa  (7508) 211
                                        B3=10.7
                                        K(H2CrL3+H)=2.7
                                        K(HCrL3+H)=5.4
                                        K(CrL3+H)=6.4
*************************************************************************
H2O                    L    Water            CAS 7732-18-5  (6115)
Water
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      ix  mixed  60°C    ?  U TI     K1=2.66   B2=4.58   1970MKc  (7588) 212
                                        K3=1.55
                                        K4=1.14
                                        K5=0.68
                                        K6=0.19
Method:cation exchange,Medium:MeOH/H2O
In: EtOH/H2O, K3=1.87, K4=1.41, K5=0.89, K6=0.38(75 C)
-------------------------------------------------------------------------
Cr+++      ix  mixed  35°C    ?  U T      K1=1.3    B2=2.80   1969SWb  (7589) 213
                                        K3=1.3 to 1.7
                                        K4=1.6 to 1.9
                                        K5=1.2 to 2.0
                                        K6=2.34
Method:cation exchange,Temp:35-60,Medium:Me2SO-H2O
-------------------------------------------------------------------------
Cr+++      oth alc/w  45°C 100%  M                      1964JKa  (7590) 214
                                        K3=1.7
                                        K4=1.4
                                        K5=0.5
                                        K6=0.2
Medium: MeOH
-------------------------------------------------------------------------
Cr+++      sp  alc/w  25°C 100%  U                      1954JOa  (7591) 215
                                        Kav=-0.60
```

Medium: EtOH, NO3. N=6. Slow reaction

****

H2PO2- HL Hypophosphite CAS 6303-21-5 (6304)
Hypophosphite;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	ix	NaClO4	50°C	0.20M	C		K1=2.7 K3=1.3 K4=1.6 K5=0.71 K6=0.079	B2= 4.50	1986WFa	(7639) 216

Methods: Donnan exclusion chromatography and cation exchange.
Ligand is H2PO2-.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	oth	NaNO3	100°C	0.2M	C		K1=2.75	B2= 4.81	1984MMi	(7640) 217

Method: Direct analytical measurement of concentrations of all particles
due to a very robust complex nature

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	?	0.24M	U		B2=4.14		1968LNc	(7641) 218

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	NaClO4	65°C	1.0M	U	T	K(Cr+H3L=CrH2L+H)=1.40		1966EBa	(7642) 219

Kinetics also used. Medium: HClO4. K=1.32(45 C), 1.38(55 C)

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sol	NaClO4	25°C	0.1M	C		K(Cr(NH3)6+L)=0.61		1977MSg	(7963) 220

For I=0.5 M Kout=0.0
For I=0.1 M and spectrophotometric method Kout=0.61

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	con	none	25°C	0.0	U	M	K(Cr(NH3)6+I)=1.3 K(Cr(en)3+I)=1.4		1974TKc	(7964) 221

Medium: 0 corr. By spec. K(Cr(NH3)6+I)=1.3, K(Cr(en)3+I)=1.3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	kin	NaClO4	25°C	1.0M	U	T	K(cis-Cr(NH3)4OHI+H)=5.8 K(trans-Cr(NH3)4OHI+H)=5.2		1971HGb	(7965) 222

At 30 C: K(cis)=5.7, K(trans)=5.2. 35 C: K(cis)=5.6, K(trans)=5.1

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	con	non-aq	25°C	100%	U		K(cis-Cr(en)2Cl2+I)=1.4		1971PWb	(7966) 223

Medium: DMF

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	45°C	4.20M	U	TIH	K1=-3.80		1968SGh	(7967) 224

Medium:4.2 M KI,0.26 M HI. K1=-4.35(15 C),-4.16(25 C),-3.98(35 C);
DH(K1)=31.8 kJ mol-1, DS=27.6(25C) J K-1 mol-1. Also I=5.6 to 1.0(K1=-5.0)

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	ix	NaClO4	25°C	0.50M	U		B2=2.12	1969MHa (8506)	225

****

MoO4-- H2L Molybdate (443)
Molybdate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	1.00M	U			1976STa (8723)	226
							K(Cr(EDTA)+L)=1.64		
Cr+++	kin	NaClO4	25°C	1.00M	U			1976STa (8724)	227
							K(Cr(EDTA)+L)=1.66		
Cr+++	EMF	NaClO4	25°C	3.00M	U			1971ROa (8725)	228
							K(Cr3+H6L6(6-))=54		
Cr+++	sp	oth/un	?	?	U	M		1967KLb (8726)	229
							B6=18.33		

Data for many poly-complexes with phosphate

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sol	R4N.X	25°C	1.00M	U			1995MPa (9131)	230
							Kout(Cr(NH3)6+L)=0.94		

Medium: NH4ClO4

Cr+++	kin	NaClO4	25°C	1.00M	C			1993ADa (9132)	231
							*K(m-Cr2OH)=-1.61		
							*K(m-Cr2(OH)2)=-5.32		
							*K(d-Cr2(OH)2)=-5.11		
							*K(d-Cr2(OH)3)=-8.35		

m-Cr2OH: monohydroxo-bridged dimer
d-Cr2(OH)2: dihydroxo-bridged dimer (cis+trans)

Cr+++	gl	NaClO4	25°C	0.50M	U	T M		1992GTa (9133)	232
							*K(Cr(NH3)5(H2O))=-4.90		

10 C: *K= -5.30; 15 C: *K= -5.15; 40 C:*K= -4.56. Ternary complex with CrO4

Cr+++	gl	NaClO4	25°C	1.0M	U	M		1986ADa (9134)	233

*K1=-1.5
*K2=-5.52
*K3=-8.18
Metal: (H2O)2(NH3)3Cr(OH)Cr(NH3)3(H2O)2

Cr+++ gl oth/un 24°C 4.50M U M 1975ABb (9135) 234
K5=1.6
K6=1.5
B6=13
K(CrL6+H2O=CrL5OH+HL)=1.3
Medium: 4.5 M NH4Cl. Additional data for mixed hydroxo complexes(cis-trans).
K(CrL5OH+H2O=CrL4(OH)2+HL)=0.47. Evidence for polynuclear complexes.

Cr+++ kin oth/un 25°C 1.0M U 1971RHa (9136) 235
K(Cr(NH3)4(OH)(H2O)+H)=5.1
Value for cis isomer. For trans, K=4.4

Cr+++ EMF NaClO4 25°C 0.10M U 1970EAb (9137) 236
K(Cr(NH3)5OH+H)=4.85
****
NO2- HL Nitrite CAS 7782-77-6 (635)
Nitrite;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 25°C 0.15M U 1971FHa (9364) 237
K(Cr(en)2L(OH)+H)=0.76 (cis)
K(Cr(en)2L(OH)+H)=0.68 (trans)

Cr+++ sp NaNO3 25°C 2.50M U K1=1.80 B2=2.75 1970GAa (9365) 238
K3=0.5

Cr+++ sp NaClO4 25°C 2.50M U K1=1.80 B2=2.78 1967GAb (9366) 239
K3=0.54
****
NO3- HL Nitrate CAS 7697-37-2 (288)
Nitrate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sol oth/un 25°C 0.25M C 1984BPd (9637) 240
Kout(Cr(phen)3+L)= 0.57
Medium:NaF; Also for I=0.5 M K1out=0.35, for 0.75 M K1out=0.34
phen=phenantroline

Cr+++ oth NaClO4 35°C 1.0M U T H K1=-1.91 1967ASb (9638) 241
Method:chemical analysis. Medium: HClO4. K1=-2.17(0 C), -2.01(25 C)
DH(K1)=18.8 kJ mol-1, DS=24.7 J K-1 mol-1
****
N3- HL Azide CAS 7782-79-8 (441)

Azide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	30°C	1.00M	U	M	K(CrAB2+L=CrABL+B)=1.41	1982PRb (10195)	242

Medium: LiClO4. A=(N,N'-ethylene-bis(salicylidenimine). B=H2O

Cr+++	sp	NaClO4	30°C	1.0M	U		K(Cr(N3)3+H=-3.4	1971TKa (10196)	243

Medium: 1-7 M HClO4, using acidity function Ho

Cr+++	oth	NaClO4	25°C	0.20M	U		K1=3.0	1971WEa (10197)	244

Method: estimated, medium: LiClO4

Cr+++	kin	NaClO4	40°C	2.0M	U		K(CrL+H) > 1.0	1968DSc (10198)	245

Cr+++	kin	oth/un	10°C	var	U		K(Cr(NH3)5L+H)=-3.26	1968STb (10199)	246

Medium: H2SO4

Cr+++	sp	oth/un	?	var	U		K1=1.67	1961SOd (10200)	247

****

OH- HL Hydroxide (57)

Hydroxide;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	EMF	KCl	25°C	0.15M	C		*K1=-4.37 *B2=-9.49 *B(-2,2)=-6.63	2004AMa (11195)	248

Calculated using LETAGROP. Using Hyperquad values are: *K1=-4.29
*B2=-9.36, *B(-2-2)=-6.84

Cr+++	sol	oth/un	22°C	0.0	C		Ks(Cr(OH)3+2H=CrOH+2H2O)=4.09 Ks(Cr(OH)3(s)=Cr(OH)3)=-6.84	2004RMa (11196)	249

Method: solubilityof Cr(OH)3(am) in HCl/NaOH, pH 2.8-13.5.
Solubility constants calculated using Pitzer model.

Cr+++	sol	oth/un	22°C	0.0	C		Ks(Cr(OH)3+OH=Cr(OH)4)=-4.36	2002RHa (11197)	250

Solubility of Cr(OH)3(am) in 0.003-10.5 m NaOH, and NaOH/NaNO3 media.
Extrapolated to I=0 (Pitzer). Ks(2Cr(OH)3+2OH=Cr2O2(OH)4+2H2O)=-5.24.

Cr+++	sol	none	25°C	0.0	C		K(Cr(OH)4+H)=12.92 K(CrOOH(s)=Cr(OH)3)=-9.57	1998ZJa (11198)	251

```
                                        K(Cr(OH)3(s)=Cr(OH)3)=-9.92
K(2Cr(OH)3+Fe(II)=FeCr2O4(s)+2H)=9.28
-------------------------------------------------------------------------------
Cr+++      sp  oth/un 25°C  1.0M C                      1997ANa (11199) 252
                                        *K(CrA3(H2O)3)=-4.78
                                        *K(CrA3(OH)(H2O)2)=-7.31
                                        *K(CrA3(OH)2(H2O))=-9.41
                                        *K(A3Cr(OH)2CrA3)=-3.29
Medium: 1.0 M NaBr. A: N,N',N"-trimethyl-1,1,1-tris(aminomethyl)ethane.
K(2CrA3(H2O)3=A3Cr(u-OH)CrA3;  K(2CrA3(H2O)3=A3Cr(u-OH)2CrA3)=-0.7.
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U                     1996DSb (11200) 253
                                        *K(Cr3(OH)5)=-4.34
                                        *K(Cr3(OH)6)=-5.64
                                        *K(Cr3(OH)7)=-6.00
                                        *K(Cr4(OH)7)=-2.56
*K(Cr4(OH)8)=-5.07, *K(Cr6(OH)11)=-2.32, *K(Cr6(OH)12)=-4.03,
*K(Cr6(OH)13)=-5.12.
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 1.00M U T                   1994CSb (11201) 254
                                        *K(Cr(OH)2Cr)=-3.68
Metal: (H2O)4Cr(OH)2Cr(H2O)4.  Also data at 5 C (-3.88) and 32 C (-2.14)
-------------------------------------------------------------------------------
Cr+++      vlt NaClO4 25°C  1.0M C                     1992WRa (11202) 255
                                        *K1=-4.26
                                        *K2=-5.92
Method: chronocoulometry.
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 1.00M U                     1991SMd (11203) 256
                                        *K(A5Cr(OH)CrA5)=-0.96
                                        *K(A5Cr(OH)CrA4(OH))=-4.27
Metal: (H2O)5Cr(OH)Cr(H2O)5
-------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 0.10M U                     1989LJa (11204) 257
                                        K(CrA(H2O)2=CrA(H2O)OH+H)=-7.5
                                        K(CrA(H2O)OH=CrA(OH)2+H)=-10.7
A = N,N'-ethylenebis(salicylidineiminate).
-------------------------------------------------------------------------------
Cr+++      ix  NaClO4 25°C 1.00M U T H                 1989MSg (11205) 258
                                        *K(A4Cr(OH)CrA4)=-0.74
Metal: (H2O)4Cr(OH)2Cr(H2O)4.  Also data at 15-45 C. DH=42.6 kJ mol-1,
DS=128 J K-1 mol-1
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 1.00M U                     1989SSb (11206) 259
                                        *B(2,2)=-5.25
                                        *B(3,4)=-8.72
                                        *B(4,6)=-13.86
                                        *B(5,8)<-17.9
*B(2,3)=-8.93, *B(3,5)=-13.07, *B(4,7)=-16.41, *B(5,9)<-20.8
B(p,q): pCr+qH=(Cr)p(OH)q
```

```
--------------------------------------------------------------------------------
Cr+++      sol NaClO4 22°C 0.01M U                      1987RSa (11207) 260
                                       *Kso(CrL3)<9.76
                                       *Kso(CrL3(s)+2H)=5.96
                                       *Kso(CrL3(s)+H)<-0.44
                                       *Ks(CrL3(s)+A=CrL4+H)=-18.25
A=H2O. Kso(CrL3)<-6.84
--------------------------------------------------------------------------------
Cr+++      gl  NaNO3  60°C 0.50M C                      1986LSa (11208) 261
                                       *K1=-4.20
                                       *B(Cr2OH)=-2.68
--------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M C                      1985MAa (11209) 262
                                       *K1=-3.88
K measured while SO2 was bubbled through the Cr(H2O)6+++ solution
--------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U                      1984SRa (11210) 263
                                       K(Cr4L6=Cr4L7+H)=-3.53
--------------------------------------------------------------------------------
Cr+++      oth none   25°C  0.0  U        K1=10.0   B2=18.3   1983RCa (11211) 264
                                       B3=24.0
                                       B4=28.6
                                       B(Cr2L2)=22.94
                                       B(Cr4L3)=47.85
Recalculation of literature data
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 1.00M C                      1983SMb (11212) 265
                                       *K1=-6.1
                                       *K2=-4.29
                                       *K(Cr2(OH)2)=-6.04
                                       *K(Cr2(OH)3)=-3.68
*K(Cr3(OH)4)=-5.63, *K(Cr3(OH)5)=-4.35, *K(Cr4(OH)6)=-5.08, *K(Cr4(OH)7)=
-2.55.
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 1.00M C                      1983SMb (11213) 266
                                       *B(2,2)=-5.34
                                       *B(3,4)=-8.9
                                       *B(4,6)=-14.1
                                       K(CrOH+CrOH)=3.3
K(CrOH+Cr2(OH)3)=4.5, K(CrOH+Cr3(OH)5)=4.9.
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 50°C 0.10M U                      1983VNa (11214) 267
                                       *K1=-3.53
--------------------------------------------------------------------------------
Cr+++      sp  oth/un 37°C    ?  U T                    1981TCb (11215) 268
                                       K(2Cr+2H2O=Cr2(OH)2+2H)=-4.60
Method: esr + spectroscopy. At 50 C: K=-4.24; at 67 C: K=-3.77
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C  1.0M U                      1976MMd (11216) 269
                                       *K(cis-Cr(NH3)4(H2O)2)=-4.96
```

```
                                        *K(cis-Cr(en)2(H2O)2)=-4.75
                                        *K(cis-Cr(trien)(H2O)2)=-4.47
                                        *K(trans-Cr(NH3)4(H2O)2)=-4.38
*K(cis-Cr(NH3)4(H2O)(OH))=-7.53; *K(cis-Cr(en)2(H2O)(OH))=-7.35;
*K(cis-Cr(trien)(H2O)(OH))=-7.14. *K(trans-Cr(NH3)4(H2O)(OH))=-7.78.
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C  1.0M U                      1976MMd (11217) 270
                                        *K(trans-Cr(en)2(H2O)2)=-4.12
*K(trans-Cr(en)2(H2O)(OH))=-7.71.
-------------------------------------------------------------------------------
Cr+++      sp  NaClO4 0.8°C  1.0M C                     1976STb (11218) 271
*K((H2O)Co(en)2(OH)Co(en)2H2O)=-0.67, *K((H2O)Co(en)2(OH)Co(en)2OH)=-7.94.
*K2 by potentiometry.
-------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 1.00M U                      1973CHb (11219) 272
                                        *K1=-4.27
                                        *K2=-7.65
*K1: trans-Cr(en)2(H2O)2 =trans-Cr(en)2(H2O)(OH) + H
-------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 1.00M U                      1973CHb (11220) 273
                                        *K1=-4.13
                                        *K2=-7.62
*K1: trans-Cr(en)A(H2O)2=trans-Cr(en)A(H2O(OH)+H, A=trimethylenediamine
-------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 1.00M U                      1973CHb (11221) 274
                                        *K1=-4.15
                                        *K2=-7.64
*K1: trans-CrA2(H2O)2=trans-CrA2(H2O)(OH)+H, A=trimethylenediamine
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 20°C 0.10M U T                    1973MSc (11222) 275
                                        *K1=-4.15
                                        *K2=-6.5
                                        Kso=-30.30 (fresh)
                                        *Kso=13.2 (metastable Cr(OH)3)
Kso: Cr(OH)3(s)=Cr+3OH; At 5 C, *K1=-4.60, *K2=-6.8, Kso=-31.0
Also by hydrogen electrode and kinetic studies
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 20°C 0.10M U                      1973MSc (11223) 276
                                        *K1=-3.5
*K1: (H2O)4Cr(OH)2Cr(H2O)4=(H2O)4Cr(OH)2Cr(H2O)3(OH) + H
-------------------------------------------------------------------------------
Cr+++      cal oth/un 25°C 0.10M U   H                  1970CHb (11224) 277
                                        *K1=-5.00
*K1: Cr(NH3)5H2O+H2O=Cr(NH3)5(OH)+H3O). DH=34.8 kJ mol-1, DS=23.0
-------------------------------------------------------------------------------
Cr+++      kin diox/w 48°C  30%  U  I                   1970CHe (11225) 278
                                        K(Cr(NH3)5F+OH)=0.74
Medium: 30% w/w dioxan/H2O, 0.1 M NaOH. In 40%, K=1.04, 52%, K=1.64.
In 52%: 32 C, K=1.59; 40%, 1.62
-------------------------------------------------------------------------------
```

Cr+++ kin diox/w 30°C 10% U TI 1970CHe (11226) 279
K(Cr(NH3)5Cl+OH)=0.18
Medium: 10% w/w dioxan/H2O, 0.1 M NaOH. In 20%, K1=0.34; 30%, 0.51
In 10%: K1=0.18(20 C), 0.20(40 C)

Cr+++ sp NaClO4 25°C 0.50M U 1970SKa (11227) 280
*K1=-4.02
At p=1 kbar Data also for other p(kbar): *K1=-4.00(p=2), -3.92(p=3)(m units)
;*Dv1=-3.8 cm3. Also data at intermediate p values

Cr+++ sp NaClO4 25°C 0.50M U T H 1970SKa (11228) 281
*K1=-4.14
At p=1 atm. DH=39.3 kJ mol-1. *K1=-4.62(5.4 C), -4.18(23 C)

Cr+++ kin oth/un 25°C U 1969RCb (11229) 282
*K1=-3.74

Cr+++ gl NaClO4 20°C 0.10M U I 1968CHb (11230) 283
*K1(Cr(NH3)5(H2O))=-5.1
In D2O: *K1=-5.26; in 20% dioxan: *K1=-5.28

Cr+++ sp NaClO4 25°C 1.0M U 1968MLb (11231) 284
*B(2,2)=-3.46

Cr+++ sp NaClO4 25°C 2.00M U 1967SKf (11232) 285
*B(2,2)=-3.35
*B(4,4)=-5.11
*B(4,6)=-10.91

Cr+++ gl NaClO4 38°C 1.00M U T H 1964THd (11233) 286
*K1=-3.60
*B(2,2)=-4.54
*B(3,4)=-7.54
*K1=-3.22(50 C), -3.09(68 C); B(2.2)=-4.25(50 C), -6.73(68 C); *B(4,3)=-6.73
(50 C), -5.9(68 C). DH(*(2,2)=52.3 kJ mol-1, DH(*(4,3))=104.1

Cr+++ gl NaClO4 25°C 0.10M U 1964WEb (11234) 287
*K1=-4.21
*K2 < -5.8

Cr+++ con none 25°C 0.0 U 1963TUa (11235) 288
*K1=-3.95

Cr+++ gl NaClO4 20°C 0.10M U 1962SCd (11236) 289
*K1=-4.1
*K2=-5.6?

Cr+++ gl KCl 20°C 0.10M U 1962SCd (11237) 290
*K1(CrCl2(H2O)4)=-6.0

```
Cr+++      sp  NaClO4 20°C 0.14M U  I M                1962SMb (11238) 291
                                        *K1(A5CrOHCrA4B)=-2.80
                                        *K2(A5CrOHCrA4(OH)) < -16
A: NH3, B: H2O.  For other substituents B, *K1=-7.63 (B=NH3), -10.62 (B=SCN)
-11.37 (B=Cl), -13.4 (B=F), -6.36 (B=enH+).  For A5CrOHCrA4(enH), *K2=-8.42
--------------------------------------------------------------------------------
Cr+++      EMF oth/un 25°C  var  C                    1959EGb (11239) 292
                                        *K1=-4.10
                                        *K2=-5.55
By spectrophotometry, room temp., *K1=-3.98
--------------------------------------------------------------------------------
Cr+++      gl  KNO3   20°C 0.50M U                    1958BJa (11240) 293
                                        *K1=-4.26
--------------------------------------------------------------------------------
Cr+++      gl  KNO3   20°C 0.50M U                    1958BJa (11241) 294
                                        *K1(Cr(NH3)2(H2O)4)=-4.11
                                        *K2(Cr(NH3)2(OH)(H2O)3)=-6.59
                                        *K3(Cr(NH3)2(OH)2(H2O)2)=-9.17
--------------------------------------------------------------------------------
Cr+++      gl  oth/un   ?   dil  U    M                1958GHb (11242) 295
                                        *K1(A2Cr(OH)2CrA2)=-6.22
H2A=oxalic acid
--------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C  1.0M U    M                1958WOa (11243) 296
                                        *K1(cis-Cr(en)2(H2O)2)=-4.80
                                        *K2(cis-Cr(en)2(H2O)2)=-7.17
                                        *K1(trans)=-4.08
                                        *K2(trans)=-7.49
--------------------------------------------------------------------------------
Cr+++      EMF NaClO4   ?  0.17M U                    1957CHb (11244) 297
                                        *K1=-4.40
--------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C  1.0M U                    1957SCf (11245) 298
                                        *K1=-4.38
--------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C  1.0M U                    1957SCf (11246) 299
                                        *K1(Cr(NH3)5(H2O))=-5.30
                                        *K1(cis-Cr(NH3)4(H2O)2)=-5.08
                                        *K2(cis-Cr(NH3)4(H2O)2)=-7.36
                                        *K1(trans)=-4.20 ?
--------------------------------------------------------------------------------
Cr+++      sol oth/un  rt     ?  U                    1956DZa (11247) 300
                                        *Ks4=-15.20
                                        *Ks6=-44.96
*Ks4: K(Cr(OH)3(s)+H2O=Cr(OH)4+H); *Ks6: K(Cr(OH)3(s)+3H2O=Cr(OH)6+3H)
--------------------------------------------------------------------------------
Cr+++      oth none   25°C  0.0  U                    1956DZa (11248) 301
                                        *Kso=8.39 (Cr2O3(s))
                                        *Kso=4.60 (Cr(OH)3(s))
                                        *Kso=11.79 (Cr(OH)3(H2O)x(s))
```

*Kso: K(1/2Cr2O3(s)+3H=Cr+1.5H2O); *Kso: K(Cr(OH)3(s)+3H=Cr+3H2O); *Kso: K(Cr(OH)3(H2O)x(s)+3H=Cr+(3+x)H2O);method:combination of thermodynamic data

---

Cr+++ sp oth/un ? var U M 1956GHb (11249) 302
*K1(CrA2(H2O)2)=-6.4
*K2=-8.8
H2A=oxalic acid

Cr+++ vlt none 22°C 0.0 U 1956KOb (11250) 303
Kso(Cr(OH)3)=-30.2

Cr+++ gl oth/un 10°C dil U M 1956WGa (11251) 304
*K1(A5Cr(OH)CrA5)=-7.8; rhodo
*K1(A5Cr(OH)CrA5)=-2.8;erythro
A:NH3. At 20 C: *K1((NH3)5Cr(H2O))=-5.2, *K1((NH3)4)Cr(H2O)2)=-5.5

Cr+++ sp NaClO4 25°C 0.06M U TIH 1955PKa (11252) 305
*K1=-3.82
Medium: LiClO4;DH(*K1)=39.3 kJ mol-1,DS=59.0; *K1=-4.05(15 C), -3.30(46.2 C),-2.48(94.6 C). Also *K1 for I=0.232 and 0.966 and intermediate temperatures

---

Cr+++ gl oth/un 8°C 0.01M U 1952CBb (11253) 306
*K1(CrA2(H2O)2)=-7.5
*K2=-9.7(cis)
*K2=-10.5(trans)

Cr+++ gl oth/un 17°C dil U T 1951HSb (11254) 307
*K1(CrCl2(H2O)4)=-6.0
*K1=-5.37 (35.8 C)

Cr+++ gl oth/un 25°C dil U 1938OKa (11255) 308
Kso=-30.3

Cr+++ kin none 15°C 0.0 U 1928BVa (11256) 309
*K1=-3.90

Cr+++ sol oth/un rt var U 1924FWa (11257) 310
K(Cr(OH)3(s)+OH=Cr(OH)4)=-0.4

Cr+++ con oth/un 25°C dil U 1921LFa (11258) 311
*K1=-3.80

Cr+++ con oth/un 25°C dil U 1921LFa (11259) 312
*K1(CrCl2(H2O)4)=-5.72

Cr+++ EMF KCl 0°C 0.10M C T H 1910BJa (11260) 313
*K2<<-6.60
Kso(Cr(OH)3)=-31.38
K(Cr(OH)3(s)+2H=CrOH)=8.56
At 17 C: *K1=-4.21, *K2=-6.23, *Kso=-30.27. Method: H electrode

DH(*Kso)=88.6 kJ mol-1

Cr+++ con oth/un 25°C dil U T H 1907BJa (11261) 314
*K1=-4.01
DH(*K1)=40.2 kJ mol-1; *K1=-4.66(0 C), -3.47(50 C), -2.99(75 C), -2.58(100C)

Cr+++ EMF oth/un 25°C dil C 1907BJa (11262) 315
*K1(CrCl2(H2O)4)=-5.37
By conductivity: *K1=-5.49

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sol	oth/un	22°C	0.0	C		2004RMa (13153)	316	
							Ks(Cr(OH)2HL+H=CrOH+H2L)=-2.52		
							Ks(Cr(OH)3+HL=Cr(OH)3HL)=-4.87		
							Ks(Cr(OH)3+H2L)=-4.06		
							Ks(Cr(OH)3+2H2L)=-3.36		

Method: solubilityof Cr(OH)3(am) in HCl/NaOH, (0.0001- 1.0 m PO4---),
pH 2.8-13.5. Solubility constants calculated using Pitzer model.

Cr+++	sol	none	25°C	0.0	C		1998ZJa (13154)	317	
							K(Cr(OH)3+H2PO4)=6.58		
							K(Cr(OH)3+HPO4)=3.74		
							K(Cr(OH)3+PO4)=3.66		

K(Cr(OH)3+H2O+HPO4+H2PO4=Cr(OH)4(HPO4)(H2PO4)+H)=-7.10.

Cr+++	kin	NaClO4	25°C	1.00M	U	M	1988SJa (13155)	318	
							K(CrA+L)=3.1		
							K(CrAL+L)=0.88		

A=CH2CN

Cr+++	sp	NaNO3	25°C	0.20M	U		1976AMb (13156)	319	
							B(CrH2PO4)=2.56 (also ion ex.)		

Cr+++	sp	oth/un	25°C	0.0	U	H	1966LAb (13157)	320	
							K(Cr+HL)=9.41		

Medium: 0 corr. By glass electrode:K=9.45. DH=0

Cr+++	sol	oth/un	18°C	var	U		1951ZHa (13158)	321	
							Kso(CrL)=-22.62 (green)		
							Kso(CrL)=-17.00 (violet)		

****

P2O7---- H4L Pyrophosphate CAS 2466-09-3 (198)
Diphosphate; from (HO)2PO.O.PO(OH)2

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

---

```
Cr+++      kin NaClO4 25°C 1.00M U    M                  1988SJa (13578) 322
                                          K(CrA+H2L)=14.8
A=CH2CN
********************************************************************************
S--                    H2L    Sulfide          CAS 7783-06-4  (705)
Sulfide;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      vlt oth/un 25°C 0.72M C  I                    1999AVb (14333) 323
                                          K(Cr+HL)=9.5
Method: determination of free S-- by cathodic stripping voltammetry.
Medium: seawater, pH 8.0, S=35. Also data for S=10.5.
********************************************************************************
SCN-                    HL    Thiocyanate      CAS 463-56-9  (106)
Thiocyanate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  NaNO3  25°C  1.0M C T  M                  1994VLa (14886) 324
                                          K(Cr(nta)+L)=0.66
Also data for 35 C (K=0.71) and 45 C (K=0.64).
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 30°C 1.00M U    M                  1982PRb (14887) 325
                                          K(CrAB2+L=CrABL+B)=1.16
Medium: LiClO4. A=(N,N'-ethylene-bis(salicylidenimine). B=H2O
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  1.0M U                       1976RSb (14888) 326
                                          K(Cr(H2O)5SH+L)=0.68
--------------------------------------------------------------------------------
Cr+++      ix  NaClO4 50°C 1.00M U    M                  1976RSc (14889) 327
                                          K(Cr(NH3)5(H2O)+L)=2.49
By kinetics: K=2.58
--------------------------------------------------------------------------------
Cr+++      ISE oth/un 25°C 0.10M U                       1975LMa (14890) 328
                                          K(Cr(NH3)5NCS+Ag)=2.97
--------------------------------------------------------------------------------
Cr+++      ix  none   20°C  0.0  U        K1=-0.93  B2=0.69   1971MCa (14891) 329
                                          K3=-0.08
                                          K4=0.79
                                          K5=-0.03
                                          K6=-0.01
--------------------------------------------------------------------------------
Cr+++      ISE KNO3   25°C 0.03M U                       1971PBa (14892) 330
                                          K(Ag+Cr(NH3)5L)=5.11
--------------------------------------------------------------------------------
Cr+++      con non-aq 25°C 100%  U                       1971PWb (14893) 331
                                          K(cis-CrCl2en2 + L-)=2.09
Medium: N,N-dimethylformamide
--------------------------------------------------------------------------------
```

```
Cr+++      sp  NaClO4 25°C 0.25M U                      1970CKa (14894) 332
                                        B(CrL+L=cis-CrL2)=1.20
                                        B(CrL+L=trans-CrL2)=0.93
-------------------------------------------------------------------------------
Cr+++      sp  oth/un 60°C 1.71M U  I M                 1967DEb (14895) 333
                                        K(Cr(NH3)5+L)=0.6
Medium: NaBr. In 0.106 NaClO4: K1=2(30 C), 1.8(45 C), 1.7(60 C). DH=-21 kJ
mol-1, DS=-25 J K-1 mol-1. In 0.16 NaClO4, 23 C: K=1.0
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C  1.0M U                     1965HSa (14896) 334
                                        K(CrSCN=CrNCS)=5.5
Medium: HClO4
-------------------------------------------------------------------------------
Cr+++      sp  non-aq   ?  100%  U  I                  1963GKc (14897) 335
                                        B3=5.6 to 6.0
                                        B6=8.3
Medium: Me2CO. In MeOH:B3=4.3 to 5.5
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 0.70M U                     1960ADb (14898) 336
                                        K(Cr(NH3)5H2O+L)=4.1
-------------------------------------------------------------------------------
Cr+++      vlt NaClO4   ?  0.50M U        K1=3.0       1960TRa (14899) 337
-------------------------------------------------------------------------------
Cr+++      sol oth/un  rt   dil  U                     1959BMa (14900) 338
                                        Kso(AgX)=-9.26
X=CrL4(NH3)2, reinekeate
-------------------------------------------------------------------------------
Cr+++      sol oth/un 15°C  dil  U                     1958POa (14901) 339
                                        Kso(Cu(I)X)=-8.44 (-8.65?)
                                        Kso(AgX)=-13.5
X=CrL4(NH3)2, reinekeate
-------------------------------------------------------------------------------
Cr+++      sp  oth/un 95°C  var  U                     1957HSc (14902) 340
                                        K(cis-CrL2=trans-CrL2)=-0.3
-------------------------------------------------------------------------------
Cr+++      sol oth/un 20°C  dil  U    M                1956BAb (14903) 341
                                        Kso(Cu(I)X)=-7.54
                                        Kso(AgX)=-7.60
                                        Kso(CdX2)=-11.16
                                        Kso(HgX2)=-14.31
Kso(TlX)=-8.55, Kso(PbX2)=-10.06; Kso(BiX3)=-12.85. X=CrL4(NH3)2 reineckeate
-------------------------------------------------------------------------------
Cr+++      sp  none   30°C  0.0  U T H    K1=3.04      1955PKa (14904) 342
DH(K1)=0.29*(t-55.5) kJ mol-1. K1=3.01(46.2 C), 3.02(63.6 C), 3.03(73.7 C),
3.06(84.8 C), 3.09(94.6 C). K1out=0.85 (I=0 corr), 0.0 (I=1.2 M NaClO4)
-------------------------------------------------------------------------------
Cr+++      kin none   25°C  0.0  U T H    K1=3.08      1955PKa (14905) 343
K1=3.14(14 C), 3.05(30 C). DH(K1)=-8.9 kJ mol-1, DS=29 J K-1 mol-1
-------------------------------------------------------------------------------
Cr+++      oth NaClO4 25°C  1.0M U T H    K1=1.87   B2=2.98   1954PBa (14906) 344
```

DH(K1)=-5.9 kJ mol-1, DS=15.5. K1=1.79, K2=1.0(50 C); K1=1.72, K2=0.6(75 C)
Method: chemical analysis.

Cr+++ con none 50°C 0.0 U K1=3.1 B2=4.8 1926BJa (14907) 345
K3=1.0
K4=0.3
K5=-0.7
K6=-1.6
Also by chemical analysis

Cr+++ con oth/un 50°C var U K1=2.52 B2=3.76 1921BJa (14908) 346
K3=0.66
K4=0.29
K5=-0.09
K6=-0.39
Also by chemical analysis

****

SO2 L Sulfur dioxide (6336)
Sulfur dioxide;

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

---

Cr+++ kin NaClO4 25°C 1.00M M H 1995MDa (15354) 347
K(CrA(OH)2CrA+L)=2.88
Reaction is (H2O)ACr(OH)2CrA(H2O)+L=ACr(OH)2(L)CrA where A=1,4,7-triaza-cyclononane. DH=21.3 kJ mol-1, DS=0.12 J K-1 mol-1.

****

SO3-- H2L Sulfite CAS 7782-99-2 (801)
Sulfite;

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

---

Cr+++ kin NaClO4 25°C 1.00M U T 1993MDa (15444) 348
out(Cr2(en)4(OH)2+HL)=1.70
*K(Cr2(en)4(OH)HL)=-1.49
*K(Cr2(en)4(OH)(H2O)L)=-2.98
Data are for di- and mono-hydroxy bridged ([OH]) species. Also data at 20 and 30 C.

Cr+++ sol NaClO4 25°C 3.0M C 1973ULa (15445) 349
Kout(Cr(en)3+L)=0.08

Cr+++ sp NaNO3 1.0M U B2=11.52 1972KBd (15446) 350

Cr+++ sp NaClO4 25°C 0.25M U 1970CKa (15447) 351
*K1=-1.21
K(Cr2(OH)2+SO2=Cr2(OH)L+H)=2.2

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	4.00M	U	I	Kout(Cr(H2O)6+SO4)=0.6 K(Cr(H2O)6+SO4)=1.40	1982MSd (16120)	352
Cr+++	cal	oth/un	25°C	0.50M	C	H		1976DHb (16121)	353
Medium: 0.50 M HClO4. DH(Cr+SO4=CrSO4)=31.8 kJ mol-1. Method: enthalpy of oxidation of CrSO4 with Ce(IV).									
Cr+++	con	oth/un	25°C	0.18M	U		Kout(CrOH+SO4)=2.02 Kout(CrOH+2SO4)=2.02 K(CrOH+SO4)=3.61 K(CrOH+2SO4)=5.42	1975MAa (16122)	354
Cr+++	sol	NaClO4	25°C	3.0M	U	HM	K(Cr(en)3)+L)=0.15 K(Cr(en)3L+L)=-0.14 K(Cr(en)3L2+L)=-0.15	1972MRe (16123)	355
Medium: LiClO4									
Cr+++	nmr	NaClO4	26°C	1.0M	U		K1out=0.98 K1in=0.11	1970BMc (16124)	356
Cr+++	vlt	NaClO4	25°C	0.10M	U		K(Cr(NH3)6+L)=1.79 K(Cr(en)3+L)=1.76	1967TYa (16125)	357
Cr+++	vlt	NaClO4	25°C	0.10M	U		K1=1.6	1966TOa (16126)	358
Cr+++	kin	oth/un	25°C	dil	U		K(Cr(NH3)5Cl+L)=2.53	1966WMb (16127)	359
Cr+++	con	oth/un	25°C	0.0	U		K1out=4.8	1963TUa (16128)	360
Cr+++	sp	NaClO4	56°C	2.0M	U	TIH	K1in=1.61	1962FTa (16129)	361
K1in=1.72(65 C). DH(K1in)=30.1 kJ mol-1, DS=106 J K-1 mol-1. In 1 M NaClO4 K1in=1.52(48 C), 1.69(60 C), 1.82(71 C), 2.00(84 C)									
Cr+++	sp	oth/un	25°C	0.0	U	M	Kout(Cr(NH3)6+L)=2.89	1958DMa (16130)	362
Cr+++	oth	NaClO4	25°C	1.0M	U		K1out=1.34	1953CTa (16131)	363

****

S2O3-- H2L Thiosulfate CAS 73686-28-7 (177)
Thiosulfate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sol NaClO4 25°C 3.0M C 1973ULa (16829) 364
Kout(Cr(en)3+L)=0.54
****
SeO3-- H2L Selenite CAS 7783-00-8 (2391)
Selenite;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sol NaClO4 25°C 3.0M C 1973ULa (17057) 365
Kout(Cr(en)3+L)=-0.02
****
TeO3-- H2L Tellurite CAS 10049-23-7 (1165)
Tellurate(IV)

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sol NaClO4 25°C 3.0M C 1973ULa (17282) 366
Kout(Cr(en)3+L)=-0.05
****
WO4-- H2L Tungstate CAS 13783-36-3 (445)
Tungstate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 25°C 1.00M U 1976STa (17437) 367
K(Cr(EDTA)+L)=1.38

Cr+++ kin NaClO4 25°C 1.00M U M 1976STa (17438) 368
K(Cr(EDTA)+L)=1.26
****
CH2O2 HL Formic acid CAS 64-18-6 (37)
Methanoic acid; H.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ ix NaNO3 25°C 0.20M U 1987SMc (17604) 369
K(2(CrOH)+2L)=6.78

Cr+++ oth oth/un 25°C 1.00M U T K1=1.93 B2=2.61 1973TRc (17605) 370
B3=3.9
K1(35 C)=2.01, B2(35 C)=2.72, B3(35 C)=4.15
K1(50 C)=2.10, B2(50 C)=2.97, B3(50 C)=4.19
****
CH4N2O L Urea CAS 57-13-6 (2018)
Carbamide, Urea; (H2N)2CO

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 23°C 0.02M U I K1=-0.72 1970KLf (17714) 371
Ionic strength 2.0 M, K1=-0.41, 3.0 M, K1=-0.21
****
C2HO2Cl3 HL Trichloroacetic CAS 76-03-9 (1205)
Trichloroethanoic acid; Cl3C.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sol oth/un 25°C 0.5M C 1984PBg (18329) 372
Kout(Cr(DMFA)6+L)=0.31
Medium: NaF
DMFA= dimethyformamide,

Cr+++ ix NaClO4 50°C 1.00M U M 1976RSc (18330) 373
K(Cr(NH3)5(H2O)+L)=0.72
By kinetics: K=0.52
****
C2HO2F3 HL Trifluoracetic CAS 76-05-1 (1360)
Trifluorethanoic acid; F3C.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 25°C 1.00M U M 1987SJa (18347) 374
K(CrA(H2O)5+L=CrA(H2O)4L)=-0.2
Medium: LiClO4. A=-CH2CN

Cr+++ ix NaClO4 50°C 1.00M U M 1976RSc (18348) 375
K(Cr(NH3)5(H2O)+L)=0.37
By kinetics: K=0.43
****
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
---
Cr+++ oth NaClO4 60°C 1.0M C K1=7.40 B2=13.54 2000CIa (18849) 376
B3=18.07
Method: chemical analysis

Cr+++ gl NaNO3 25°C 0.10M U 1989LJa (18850) 377
K(CrA(H2O)2+L=CrAL)=4.80
A = N,N'-ethylenebis(salicylidineiminate).

Cr+++ sp NaClO4 25°C 1.00M U T 1988AAa (18851) 378
*K(CrL2(H2O)2)=-5.97
*K(CrL2(OH)(H2O))=-9.64
Trans isomer. 15 C, *K1=-6, *K2=-9.48. At 35 C, *K1=-6.07, *K2=-9.34

```
------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U    M                  1987SJa (18852) 379
                                          K(CrA(H2O)5+L=CrA(H2O)4L)=0.4
Medium: LiClO4. A=-CH2CN. For methyl-ethanedioic acid, K=0.34
------------------------------------------------------------------------------
Cr+++      con diox/w 25°C    0  U                      1982MSg (18853) 380
                                          Kout(Cr(NH3)6+L)=3.46
Also for 10%mass dioxane K1out=3.59; for 20% K1out=3.72;for 30% K1out=3.86
for 40% K1out=3.94; for 50% K1out=5.10
------------------------------------------------------------------------------
Cr+++      con diox/w 25°C    0  U                      1982MSg (18854) 381
                                          Kout(Cr(NH3)5Cl+L)=2.70
Also for 10%mass dioxane K1out=2.86; for 20% K1out=2.96;for 30% K1out=3.09
for 40% K1out=3.17; for 50% K1out=3.32
------------------------------------------------------------------------------
Cr+++      gl  KNO3   50°C 1.00M U   H                  1976KAb (18855) 382
                                          K(CrL2+H2L=CrL3+2H)=-0.05
------------------------------------------------------------------------------
Cr+++      kin oth/un 50°C 1.60M U  I                    1967KHb (18856) 383
                                          K3=0.28(?)
                                          K(CrL2+HL)=-0.07
K(CrL2+HL=CrL3+H)=-0.73(I=0), 0.26(I=0.1), 0.59(I=0.2),0.92(I=0.5),1.15(I=1)
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U        K1=5.34   B2=10.51  1965NUa (18857) 384
                                          K3=4.93
------------------------------------------------------------------------------
Cr+++      gl  KNO3   32°C  1.0M U                      1957DSa (18858) 385
                                          K3=5.47
******************************************************************************
C2H3O2Cl               HL    Chloroacetic     CAS 79-11-8  (34)
Chloroethanoic acid; ClCH2.COOH
------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 1.00M U    M                  1987SJa (19357) 386
                                          K(CrA(H2O)5+L=CrA(H2O)4L)=1.31
Medium: LiClO4. A=-CH2CN
------------------------------------------------------------------------------
Cr+++      sol oth/un 25°C  0.5M C                       1984PBf (19358) 387
                                          Kout(Cr(DMSO)6+L)=1.16
                                          Kout(Cr(DMSO)6+2L=1.36
Medium: NaF
DMSO= dimethylsulfoxide, (CH3)2SO
------------------------------------------------------------------------------
Cr+++      sol oth/un 25°C  0.5M C                       1984PBg (19359) 388
                                          Kout(Cr(DMFA)6+L)=0.68
                                          Kout(Cr(DMFA)6+2L)=1.57
Medium: NaF
DMFA= dimethyformamide,
******************************************************************************
```

C2H4O2 HL Acetic acid CAS 64-19-7 (36)
Ethanoic acid; CH3.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	oth	NaClO4	25°C	0.30M	U	T	K1=4.63	B2=7.06	1970TQa (19931)	389
							B3=9.58			

Method: chemical analysis
Temperature range 25-75C: K1(75C)=4.76, B2(75C)=7.34, B3=10.41

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	non-aq	25°C	100%	U		K(CrL+2L)=5.03	1964KLa (19932)	390

Medium: ethanoic acid

****

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
Cr+++	sp	NaClO4	25°C	1.00M	U	M	K(CrA(H2O)5+L=CrA(H2O)4L)=0.96	1987SJa (21519)	391

Medium: LiClO4. A=-CH2CN. For HA=Me3N.CH2.COOH, K=0.75

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	NaClO4	45°C	0.40M	U	T	K1=7.6		1984ABa (21520)	392
Cr+++	oth	NaClO4	35°C	0.01M	U	T	K1=8.07	B2=14.32	1984YSa (21521)	393
							B3=19.23			

Method: paper electrophoresis.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	NaClO4	50°C	0.10M	U		K1=8.70	B2=16.33	1983VNa (21522)	394
							B3=23.07			
							B(CrHL)=11.14			
Cr+++	sp	oth/un	25°C	0.60M	U	M	K(Cr(H20)6+L=CrL(H2O)5+H2O)=3.05, K(CrL(H2O)5+L=CrL2(H2O)4+H20)=2.39		1973BFb (21523)	395
							K(CrL2(H2O)4=...)=2.05, K(CrL3(H2O)3+L=...)=1.80.		Medium: Mg(ClO4)2	
Cr+++	gl	NaClO4	25°C	0.10M	U	T	K1=8.62	B2=16.27	1965MBb (21524)	396
Cr+++	gl	oth/un	25°C	0.50M	U		K1=8.4	B2=14.80	1963KMa (21525)	397
							K3=5.7			

****

C2H5N3O2 L Biuret CAS 108-19-0 (1126)
Carbomoylurea (Allophanic acid); H2N.CO.NH.CO.NH2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	?	?	U		K1=3.26	B2=6.00	1971MSg (21850)	398
							K3=1.88			

****

C2H5O5As H3L (9233)
Carboxymethylarsonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	oth/un	25°C	0.50M	U		K1=10.66		1976TNa (21864)	399

****

C2H7N5 L Biguanide CAS 56-03-1 (2967)
Biguanide; H2N.C(:NH)NH.C(:NH)NH2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	oth/un	32°C	0.05M	U		K1=13.95	B2=21.90	1952BGb (22524)	400

****

C2H7O2As HL Cacodylic acid CAS 75-60-5 (586)
Dimethylarsinic acid; (CH3)2.AsO2H

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	22°C	var	U		B2=4.1		1961BAa (22536)	401

****

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
Cr+++	vlt	oth/un	30°C	0.60M	U	M	K1=3.25	B2=2.903	1986SKd (23138)	402
							B3=5.397			

In 0.6 M NH4ClO4. Data also for 9 reactions forming Cr-en-succinate species

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	vlt	R4N.X	30°C	0.60M	C		K1=3.25	B2= 2.90	1985SKe (23139)	403
							B3=5.37			

Method: polarography. Medium: 0.60 M NH4ClO4.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	NaCl	24°C	1.00M	U	I M			1975ABa (23140)	404
							B3=19.5			
							K3=6.43			
							B(CrL2+HL=CrL2HL)=0.0			
							*K(CrL2HL(H2O)=-4.4			

Also data for mixed hydroxo complexes(cis-trans). Polynuclear complexes.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	oth	NaClO4	25°C	0.10M	U	I M			1971NOa (23141)	405
							K(CrL3+H2A)=2.62			

I=0.5 M, K=1.70; I=1.0 M, K=1.30. H4A=EDTA
Methods: optical rotation, circular dichroism

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	25°C	0.10M	U		K1=16.5		1964OMa (23142)	406
							K2 < 14			
Cr+++	oth	oth/un	45°C	?	U	H			1958FMa (23143)	407

45-50 C. DH(CrCl3L6=CrCl3L3+3L)=76 kJ mol-1

****

C2H8O7P2 H4L HEDPA CAS 2809-21-4 (436)

1-Hydroxyethane-1,1-diphosphonic acid; CH3.C(OH)(PO3H2)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	KNO3	25°C	0.10M	C		K1=19.0 B2=26.70	1998LDa (23361)	408
							B(CrHL)=24.9		
							B(CrH2L)=28.9		
							B(CrH3L)=31.1		
							B(CrHL2)=33.3		
							B(CrH2L2)=39.7, B(CrH-2L)=3.3		

****

C3H4N2 L Pyrazole CAS 288-13-1 (367)

1,2-Diazole, pyrazole; cyclo(-NH.N:CH.CH:CH-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	oth/un	25°C	0.08M	C	HM		1988WCa (23571)	409
							K(Cr(NH3)5L+H)=6.71		
							DH=-44.4 kJ mol-1		

****

C3H4N2 L Imidazole CAS 288-32-4 (90)

1,3-Diazole, imidazole; C3H4N2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	oth/un	25°C	0.08M	C	HM		1988WCa (23872)	410
							K(Cr(NH3)5L+H)=9.35		
							DH=-58.2 kJ mol-1		
Cr+++	sp	NaClO4	30°C	1.00M	U	M		1982PRb (23873)	411
							K(CrAB2+L=CrABL+B)=1.85		
							Medium: LiClO4. A=(N,N'-ethylene-bis(salicylidenimine). B=H2O		

****

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
Cr+++	gl	NaClO4	50°C	0.10M	U	M		1983VNa (24422)	412
							B(Cr(gly)L)=17.04		
							B(Cr(gly)2L)=22.60		
							B(Cr(gly)L2)=21.05		
							K(Cr(gly)+L)=8.34		
							K(CrL+gly)=9.71, K(Cr(gly)2+L)=6.28, K(CrL2+gly)=7.70.		
Cr+++	gl	NaClO4	30°C	0.10M	U		K1=5.81 B2=9.85	1976DGd (24423)	413
							K3=3.47		

```
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U        K1=7.06   B2=12.85  1966MTa (24424) 414
                                         K3=3.30
*******************************************************************************
C3H6O2                 HL    Propionic acid   CAS 79-09-4  (35)
Propanoic acid; CH3.CH2.COOH
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      sol oth/un 25°C  0.5M C                        1984PBf (24992) 415
                                         Kout(Cr(DMSO)6+L)=0.75
                                         Kout(Cr(DMSO)6+2L=1.32
Medium: NaF
DMSO= dimethylsulfoxide, (CH3)2SO
-------------------------------------------------------------------------------
Cr+++      sol oth/un 25°C  0.5M C                        1984PBg (24993) 416
                                         Kout(Cr(DMFA)6+L)=0.64
Medium: NaF
DMFA= dimethyformamide,
-------------------------------------------------------------------------------
Cr+++      oth NaClO4 25°C 0.30M U T      K1=4.70   B2=7.06   1970TQa (24994) 417
                                         B3=9.72
Method: chemical analysis. 50 C: K1=4.75, B2=7.63; 75 C: K1=4.85, B2=8.01,
B3=11.43
-------------------------------------------------------------------------------
Cr+++      gl  KCl    30°C 0.15M U        K1=2.74        1963MSc (24995) 418
*******************************************************************************
C3H6O2S               H2L    Thiolactic acid  CAS 79-42-5  (366)
2-Mercaptopropanoic acid;  CH3.CH(SH).COOH
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  oth/un 22°C    ?  U        K1=13.39  B2=22.66  1977HSc (25132) 419
                                         K3=7.12
*******************************************************************************
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
-------------------------------------------------------------------------------
Cr+++      sp  oth/un 25°C 0.60M U        K1=3.09   B2=5.35   1973BFb (26153) 420
                                         K3=1.80
                                         K4=1.58
                                         K5=1.38
                                         K6=1.34
Medium: 0.6 M Mg(ClO4)2
-------------------------------------------------------------------------------
Cr+++      sp  KCl    20°C 0.10M U                       1973VBa (26154) 421
                                         B3=25.27
Method: circular dichroism
```

```
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U        K1=8.53   B2=15.97  1965MOa (26155) 422
------------------------------------------------------------------------------
Cr+++      gl  oth/un 25°C 0.50M U        K1=8.6    B2=15.20  1963KMc (26156) 423
                                          K3=5.6
******************************************************************************
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
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U        K1=9.69        1968TKc (26453) 424
******************************************************************************
C3H7NO2S              H2L    Cysteine         CAS 52-90-4  (96)
2-Amino-3-mercaptopropanoic acid; H2N.CH(CH2.SH)COOH
------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 50°C 0.10M U    M                   1982VNa (26764) 425
                                          B(CrHL)=18.33
                                          B(CrH2L2)=35.90
                                          B(CrHL2)=31.83
B(CrHL(Asp))=29.74, B(CrL(Asp))=26.03
------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.10M U        K1=8.05   B2=15.50  1981MCa (26765) 426
                                          K3=6.32
By potentiometry: K1=8.32, K2=7.69, K3=6.94
******************************************************************************
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
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M C    M   K1=8.31   B2=15.44  1986MCd (27123) 427
                                          B(CrHL)=11.27
Ternary complexes with methionine and ethionine
------------------------------------------------------------------------------
Cr+++      oth NaClO4 35°C 0.10M C        K1=7.83   B2=14.04  1986SGd (27124) 428
                                          B3=18.35
Method: electrophoresis
------------------------------------------------------------------------------
Cr+++      gl  oth/un 25°C 0.50M U        K1=8.0    B2=14.20  1963KMc (27125) 429
                                          K3=5.2
******************************************************************************
C3H8O3                  L    Glycerol         CAS 56-81-5  (2707)
Propane-1,2,3-triol; HO.CH2.CH(OH).CH2.OH
------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
------------------------------------------------------------------------------
Cr+++      sp  oth/un   ?     ?  U                        1970VVa (27726) 430
```

K(Cr(OH)4+L)=0.49

****

C3H10N2 L Propanediamine CAS 109-76-2 (123)
1,3-Diaminopropane; H2N.CH2.CH2.CH2.NH2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	1.00M	C	H		1993MMb (28301)	431
							*K(cis-CrL2)=-4.778		
							*K(cis-CrL2(OH))=-7.442		
							*K(trans-CrL2)=-4.096		
							*K(trans-CrL2(OH))=-7.668		

DH(*K(cis-CrL2))=37; DH(*K(cis-CrL2(OH))=38; DH(*K(trans-CrL2))=30;
DH(*K(trans-CrL2(OH)))=42 kJ mol-1.

****

C3H12NO9P3 H6L NTPA CAS 6419-19-8 (2920)
Nitrilotris(methylenephosphonic acid); N(CH2PO3H2)3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	KNO3	25°C	0.10M	C		K1=20.67 B2=27.60	1998LDa (28555)	432
							B(CrHL)=27.1		
							B(CrH2L)=32.3		
							B(CrH3L)=36.4		
							B(CrH4L)=39.8		

****

C4H3N3O4 H3L Violuric acid CAS 26351-19-9 (1208)
2,4,5,6-(1H,3H)Pyrimidinetetrone-5-oxime, 5-isonitrosobarbituric acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	U			1982GMa (28745)	433
							K(CrH3L3+H)=6.99		
							K(CrH4L3+H)=4.83		
							K(CrH5L3+H)=4.25		
							K(CrH6L3+H)=3.32		

****

C4H4O4 H2L Maleic acid CAS 110-16-7 (111)
cis-Butenedioic acid; HOOC.CH:CH.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	50°C	0.10M	U	M		1983VNa (29060)	434
							B(Cr(gly)L)=15.74		
							B(Cr(gly)2L)=22.35		
							B(Cr(gly)L2)=20.42		
							K(Cr(gly)+L)=7.04		

K(CrL+gly)=9.16, K(Cr(gly)2+L)=6.02, K(CrL2+gly)=8.01

Cr+++	gl	NaClO4	25°C	0.10M	U		K1=5.4 B2=8.40	1968TKa (29061)	435

K3=1.9

Cr+++ gl NaClO4 25°C 0.10M U K1=5.4 B2=8.40 1968TKa (29062) 436
K3=1.9

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaNO3	60°C	0.50M	U		K1=5.32	1986LRa (29186)	437
							K(Cr(OH)L+H)=4.11		
							K(Cr2(OH)2L2+2H)=10.34		
Cr+++	gl	NaNO3	60°C	0.50M	U			1985LXa (29187)	438
							B(Cr2H-1L)=5.14		
							B(Cr2H-1L2)=10.10		

****

C4H5N3O2 HL 6-Aminouricil CAS 873-83-6 (6213)
4-Amino-2,6-dihydroxypyrimidine;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	30°C	0.10M	U		K1=14.67 B2=22.69	1986JDa (29422)	439

****

C4H6N2 L 2-Me-Imidazole CAS 693-98-1 (122)
2-Methyl-1,3-diazole; C3H3N2.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	oth/un	25°C	0.08M	C	HM		1988WCa (29478)	440
							K(Cr(NH3)5L+H)=10.20		

DH=-71 kJ mol-1

****

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	vlt	R4N.X	30°C	0.60M	U	M	K1=1.778 B2=1.602	1986SKd (29958)	441
							B3=2.741		

Also B(Cr(en)L2)=4.277; B(Cr(en)2L)=5.225; K(CrL2+en)=2.675; K(Cr(en)+2L)=
1.374; K(Cr(en)2+L)=2.322 and ligand displacement reactions. In NH4ClO4

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	50°C	0.10M	U	M		1983VNa (29959)	442
							B(Cr(gly)L)=15.37		
							B(Cr(gly)L2)=18.98		
							K(CrL+gly)=8.70		
							K(Cr(gly)+L)=6.67		

K(CrL2+gly)=6.76

Cr+++ gl NaClO4 25°C 0.10M U K1=6.42 B2=10.99 1966MTa (29960) 443
K3=2.86
****
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
---
Cr+++ gl NaClO4 30°C 0.10M U K1=7.25 B2=13.61 1976DGd (30119) 444
K3=4.73
****
C4H6O4S H2L Thiodiacetic CAS 123-93-3 (140)
2,2'-Thiodiglycolic acid, Thiodiethanoic acid; HOOC.CH2.S.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl NaClO4 25°C 0.10M U 1970PPa (30213) 445
K(Cr+HL)=4.85
****
C4H6O5 H2L Diglycolic acid CAS 110-99-6 (243)
Di(carboxy)methyl ether, 2,2'-Oxydiethanoic acid; HOOC.CH2.O.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl NaClO4 25°C 0.10M U TIH K1=3.55 B2=6.64 1979SDc (30859) 446
****
C4H6O6 H2L DL-Tartaric acd CAS 133-37-9 (94)
DL-Tartaric acid,DL-2,3-Dihydroxybutanedioic acid; HOOC.CH(OH).CH(OH).COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ vlt R4N.X 30°C 0.60M C M K1=2.27 B2= 2.00 1985SKe (31017) 447
B3=3.59
Method: polarography. Medium: 0.60 M NH4ClO4.
Ternary complexes with 1,2-diaminoethane.
****
C4H7NO3 HL CAS 543-24-8 (3586)
N-Acetylglycine; CH3.CO.NH.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl NaNO3 25°C 0.10M U M K1=3.79 1995VDa (31499) 448
B(CrAL)=18.93
B(CrBL)=15.47
B(CrCL)=8.3
H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-
dinitrosalicylic acid.
****
C4H7NO4 H2L Aspartic acid CAS 56-84-8 (21)

Aminobutanedioic acid; H2N.CH(CH2.COOH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C	M	K1=12.46 B2=21.86 B(CrHL2)=24.30	1986MCd (31839)	449

For A=DL-methionine: B(CrAL)=19.75; B(CrHAL)=23.90. For B=DL-ethionine: B(CrBL)=19.84; B(CrHBL)=24.08.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	50°C	0.10M	U	M	K1=12.15 B2=21.13 B(CrHL2)=24.07	1982VNa (31840)	450
Cr+++	sp	NaClO4	80°C	0.50M	U		K1=3.60 B2=5.62	1974LAa (31841)	451
Cr+++	gl	NaClO4	25°C	0.10M	U		K1=10.1 B2=19.60	1970MSd (31842)	452
Cr+++	oth	oth/un	?	?	U		K1=3.62	1952ALa (31843)	453

****

C4H7NO4 H2L IDA CAS 142-73-4 (118)

Iminodiethanoic acid; HN(CH2.COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	50°C	0.10M	U	M	K1=12.1 B2=21.8 B(CrHL2)=23.5	1982VNa (32215)	454

B((CrL(Asp))=22.78, B(CrL(Glu))=22.22 etc.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	U	T	K1=8.88 B2=15.70	1981DSa (32216)	455

At 35 C: K1=8.71, B2=15.38; 45 C: 8.56, 15.19

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	U		K1=10.9 B2=21.40	1970MSd (32217)	456

****

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
Cr+++	sp	NaClO4	80°C	0.50M	U		K1=3.30 B2=5.31	1974LAa (32690)	457
Cr+++	gl	oth/un	25°C	0.50M	U		K1=7.7 B2=13.60 K3=4.9	1963KMb (32691)	458

****

C4H8O2 HL CAS 107-92-6 (1118)

n-Butanoic acid; CH3.CH2.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sol	oth/un	25°C	0.5M	C		Kout(Cr(DMSO)6+L)=1.05 Kout(Cr(DMSO)6+2L=1.42	1984PBf (33335)	459

Medium: NaF
DMSO= dimethylsulfoxide, (CH3)2SO

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sol	oth/un	25°C	0.5M	C		Kout(Cr(DMFA)6+L)=0.21	1984PBg (33336)	460

Medium: NaF
DMFA= dimethyformamide,

C4H9NO2 HL 2-Aminobutyric CAS 2835-81-6 (571)
2-Aminobutanoic acid; CH3.CH2.CH(NH2).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C	M	K1=8.84 B2=16.09 B(CrHL)=12.25	1986MCd (33912)	461

Ternary complexes with methionine and ethionine

C4H9NO3 HL Threonine CAS 72-19-5 (48)
2-Amino-3-hydroxybutanoic acid; H2N.CH(CH(OH).CH3)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C	M	K1=8.17 B2=15.30 B(CrHL)=11.04	1986MCd (34294)	462

Ternary complexes with methionine and ethionine

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	oth	NaClO4	35°C	0.10M	C		K1=7.96 B2=14.02 B3=19.32	1986SGd (34295)	463

Method: electrophoresis

C5H4N2O2 HL CAS 98-97-5 (1879)
Pyrazine-2-carboxylic acid; cyclo(-CH:CH.N:C(COOH).CH:N-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	1.0M	C		K1=3.25 B2= 6.29 B3=8.46 K(Cr+HL=CrL+H)=0.55 K(Cr+2HL=CrL2+2H)=0.89 K(CrL2+HL=CrL3+H)=-0.53	1978MBd (36046)	464

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	30°C	1.00M	U	M	K(CrAB2+L=CrABL+B)=2.00	1982PRb (36612)	465

Medium: LiClO4. A=(N,N'-ethylene-bis(salicylidenimine). B=H2O

C5H5NO2 HL CAS 35940-93-3 (3618)
3-Furancarboxaldehyde oxime (3-Furfuraldoxime); C4H3O.CH(:N.OH)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	diox/w	15°C	75%	U	TIH	K1=9.41	B2=18.39 K3=8.55	1963ASa (36813)	466

Medium: 75% dioxan, 0.1 M NaClO4. K1=10.78(I=0),10.54(I=0.01); K2=10.24(0), 9.73(0.01); K3=9.62(0),9.43(0.01). Also at 25, 35 C

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	diox/w	35°C	75%	U	TIH			1963ASa (36814)	467

Medium: 0,75% dioxan. DH(K1)=-33.4 kJ mol-1,DS=128.3 J K-1 mol-1
DH(K2)=-17.0,DS=135.0; DH(K3)=-24.3,DS=99.1

****

C5H5N5 L Adenine CAS 73-24-5 (237)
6-Aminopurine; H2N.C5H3N4

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	KNO3	50°C	0.50M	U		K1=4.0	B2=7.10	1980KHa (36970)	468

****

C5H5O2F3 HL CAS 367-57-7 (163)
1,1,1-Trifluoropentane-2,4-dione; CF3.CO.CH2.CO.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	NaClO4	25°C	0.5M	C		K1=6.70		1998BLa (37050)	469
Cr+++	gl	NaClO4	25°C	0.50M	U		K1=6.7		1992BHb (37051)	470

****

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
Cr+++	sp	NaClO4	25°C	0.5M	C		K1=10.1		1998BLa (37933)	471
Cr+++	gl	NaClO4	25°C	0.50M	U		K1=10.1		1992BHb (37934)	472
Cr+++	sp	NaClO4	55°C	0.50M	U		K1=10.08		1986HOa (37935)	473

****

C5H9NO3 HL Hydroxyproline CAS 51-35-4 (416)
4-Hydroxy-2-pyrrolidinecarboxylic acid; C4H7N(OH)(COOH)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	kin	NaNO3	40°C	1.0M	C	T	Kout(Cr(H2O)6+L)=1.05 Kout(Cr(OH)(H2O)5+L)=1.01		1987KSe (38723)	474

Data for 35-55 C.

****

C5H9NO4 H2L Glutamic acid CAS 56-86-0 (22)
2-Aminopentanedioic acid; H2N.CH(CH2.CH2.COOH)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C	M	K1=11.79	B2=19.46	1986MCd (39076)	475
							B(CrHL)=14.58			
							B(CrHL2)=24.19			

Ternary complexes with methionine and ethionine

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	NaClO4	50°C	0.10M	U	M	K1=11.39	B2=18.96	1982VNa (39077)	476
							B(CrHL)=14.04			
							B(CrHL2)=23.91			

****

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
Cr+++	gl	oth/un	25°C	0.50M	U		K1=8.3	B2=14.70	1963KMc (40696)	477
							K3=5.4			

****

C5H11NO2S HL Methionine CAS 63-68-3 (42)
2-Amino-4-(methylthio)butanoic acid; H2N.CH(CH2.CH2.S.CH3)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	oth	NaClO4	35°C	0.10M	C		K1=7.52	B2=12.42	1996TEa (41084)	478

Method: paper electrophoresis.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	dis	NaClO4	35°C	0.10M	U		K1=7.52		1994TEa (41085)	479

Methd: Paper electrophoresis; Medium: 0.1 HClO4.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C	M	K1=8.35	B2=15.52	1986MCd (41086)	480
							B(CrHL)=11.41			

For A=aspartate, B(CrAL)=19.75; B(CrHAL)=23.90

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C	M			1986MCd (41087)	481
							B(CrAL)=18.75			
							B(CrHAL)=22.68			
							B(CrBL)=16.25			
							B(CrHBL)=20.06			

A=glutamate; B=2-aminobutanoate. Also B(CrCL)=15.72, B(CrHCL)=19.64, C=ser-
inate. B(CrDL)=15.52, B(CrHDL)=19.35, D=threoninate

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	NaClO4	25°C	0.10M	U		K1=7.45	B2=13.90	1981MCa (41088)	482
							K3=5.99			
							K1=7.91 by potentiometry			
							K2=6.94 by potentiometry			

K3=6.43 by potentiometry

Cr+++ gl oth/un 25°C 0.50M U K1=8.3 B2=14.50 1963KMc (41089) 483
K3=5.3

****

C5H11NO2S H2L Penicillamine CAS 52-66-4 (350)
DL-2-Amino-3-mercapto-3-methylbutanoic acid; (CH3)2C(SH)CH(NH2)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	oth/un	22°C	0.20M	U		K1=15.97	B2=28.39	1977HSc (41254)	484

Medium: CH3COONa/CH3COOH

****

C6H3N3O7 HL Picric acid CAS 88-89-1 (593)
2,4,6-Trinitrophenol; HO.C6H2(NO2)3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	21°C	0.40M	U		K1=1.05	B2=3.20	1955BKa (42101)	485

Medium:0.2-0.9(some EtOH)

****

C6H4N2O4 H2L CAS 89-01-0 (5801)
Pyrazine-2,3-dicarboxylic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	NaClO4	25°C	1.0M	C		K1=3.82	B2= 7.43	1978MBd (42206)	486
							B3=10.4			
							K(Cr+HL=CrL+H)=0.98			
							K(Cr+2HL=CrL2+2H)=1.75			
							K(CrL2+HL=CrL3+H)=0.20			

****

C6H4N2O5 HL CAS 50-28-5 (505)
2,4-Dinitrophenol; HO.C6H3(NO2)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	sp	oth/un	21°C	0.40M	U		K1=1.01		1955BKa (42226)	487
							B3=3.21			

Medium:0.2-0.7(some EtOH)

****

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
Cr+++	sp	NaClO4	25°C	0.50M	U		B2=7.37		1977CAa (42511)	488
							B3=9.73			
							K(Cr+H2L=CrHL+H)=0.66			
							K(CrHL+HL=CrHL2+H)=-0.46			

```
                                        K(CrL2+H)=3.6
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U       K1=4.76   B2=9.14   1968TKc (42512) 489
                                        K3=4.55
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U       B2=10.22      1966MPb (42513) 490
********************************************************************************
C6H5NO2                HL    Nicotinic acid   CAS 59-67-6  (419)
3-Pyridine-carboxylic acid; C5H4N.COOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      gl  KNO3   25°C 0.10M U       K1=9.30   B2=17.66  1988ZMa (42665) 491
                                        K3=7.78
--------------------------------------------------------------------------------
Cr+++      sp  oth/un 30°C 1.00M U    M                  1982PRb (42666) 492
                                        K(CrAB2+L=CrABL+B)=0.28
Medium: LiClO4. A=(N,N'-ethylene-bis(salicylidenimine). B=H2O
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U       K1=2.70       1977CHa (42667) 493
********************************************************************************
C6H5NO2                HL    Isonicotinic ac  CAS 55-22-1  (1639)
4-Pyridine-carboxylic acid; C5H4N.COOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U       K1=2.90       1977CHa (42698) 494
********************************************************************************
C6H5NO2S              H2L                       (6876)
2-Mercaptopyridine-3-carboxylic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      vlt non-aq 25°C 100%  U                    1994AAa (42707) 495
                                        K3eff=14.40
Medium: DMSO, 0.1 M Et4NClO4. By spectrophotometry: K3eff=14.18
********************************************************************************
C6H6N2O                HL                    CAS 873-69-8  (1258)
Pyridine-2-aldoxime; C5H4N.CH:NOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U       K1=9.6    B2=17.7   1975CPc (43290) 496
                                        B3=24.9
                                        B(Cr2L)=12.0
********************************************************************************
C6H8N2                  L    2-Picolylamine   CAS 29722-36-9  (502)
2-(Aminomethyl)pyridine; C5H4N.CH2NH2
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
```

```
------------------------------------------------------------------------------
Cr+++      sp  none   25°C  0.0  C        K1=5.65   B2= 8.81  1979SSd (45351) 497
                                          K3=2.21
******************************************************************************
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
------------------------------------------------------------------------------
Cr+++      EMF NaClO4 24°C 0.10M U                      1966TPb (46066) 498
                                          K(Cr+H3L=CrL+3H)=-5.55
                                          K(CrH-1L+H)=5.3
                                          K(CrOH(H-1L)+H=CrH-1L)=6.5
******************************************************************************
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
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 30°C  1.0M U T  M                 1997BBd (46755) 499
                                          *K(CrL)=-5.78
                                          *K(Cr(OH)L)=-8.33
                                          K(CrL+Hacac=CrL(acac)+H)=0.13
                                          K(CrL+H)=0.26
At 40 C: *K(CrL)=-5.53, *K(Cr(OH)L)=-8.00. At 50 C: *K(CrL)=-5.29,
*K(Cr(OH)L)=-7.70.
------------------------------------------------------------------------------
Cr+++      dis NaClO4 35°C 0.10M U        K1=10.60       1994TEa (46756) 500
Methd: Paper electrophoresis; Medium: 0.1 HClO4.
------------------------------------------------------------------------------
Cr+++      sp  NaClO4 40°C 0.10M C                      1990HXa (46757) 501
                                          *K(Cr(nta)(H2O)2)=-5.43
------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U T      K1=9.74   B2=18.11  1981DSa (46758) 502
At 35 C: K1=9.51, B2=17.55; 45 C: 9.32, 17.33
------------------------------------------------------------------------------
Cr+++      gl  KNO3   20°C 0.10M U        K1=9.52        1977KMa (46759) 503
                                          K1=9.90 by spectrophotometry
------------------------------------------------------------------------------
Cr+++      sp  KNO3   22°C 0.10M U                      1972IJa (46760) 504
                                          K(Cr(OH)L+H)=5.87
                                          K(Cr(OH)2L+H)=8.74
                                          K(Cr(OH)3L+H)=11.81
------------------------------------------------------------------------------
Cr+++      gl  KCl    20°C 0.10M U        K1=>10         1948SBa (46761) 505
                                          K(CrLOH+H)=6.5
                                          K(CrL(OH)2+H)=7.3
******************************************************************************
C6H10O2                HL                   CAS 3002-24-2  (2742)
2,4-Hexanedione; CH3.CO.CH2.CO.CH2.CH3
```

```
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  0.5M C        K1=11.0        1998BLa (47926) 506
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.50M U        K1=11.0        1992BHb (47927) 507
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M C        K1=10.98       1989BHb (47928) 508
Medium: 0.50 M NaClO4/HClO4.
********************************************************************************
C6H10O4S2             H2L                    CAS 7244-02-2  (438)
1,2-Bis(carboxymethylthio)ethane; HOOC.CH2.S.CH2.CH2.S.CH2.COOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U                       1971PPb (48236) 509
                                        K(Cr+HL)=5.38
********************************************************************************
C6H11NO5              H2L    HIMDA           CAS 93-62-9  (192)
N-(2-Hydroxyethyl)iminodiethanoic acid; HO.CH2.CH2.N(CH2.COOH)2
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  KCl    20°C 0.10M U        K1=16.7        1975KKa (48709) 510
********************************************************************************
C6H13NO2               HL    Isoleucine       CAS 73-32-5  (424)
2-Amino-3-methylpentanoic acid; CH3.CH2.CH(CH3).CH(NH2).COOH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      kin KNO3   25°C  1.0M C                       1990DKb (49901) 511
                                        Kout(Cr(H2O)6+L)=0.64
                                        Kout(Cr(OH)(H2O)5+L)=0.08
********************************************************************************
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
--------------------------------------------------------------------------------
Cr+++      oth NaClO4 35°C 0.10M C        K1=8.50   B2=15.20  1986SGd (50067) 512
                                        B3=21.70
Method: electrophoresis
--------------------------------------------------------------------------------
Cr+++      sp  oth/un 25°C 0.60M U        K1=3.16   B2=5.45   1973BFb (50068) 513
                                        K3=1.93
                                        K4=1.69
                                        K5=1.31
                                        K6=1.26
Medium: Mg(ClO4)2
--------------------------------------------------------------------------------
```

Cr+++ gl oth/un 25°C 0.50M U K1=8.8 B2=15.60 1963KMc (50069) 514
K3=5.9
****
C6H13NO2S HL Ethionine CAS 67-21-0 (1909)
2-Amino-4-(ethylthio)butanoic acid; CH3.CH2.S.CH2.CH2.CH(NH2).COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl NaClO4 25°C 0.10M C M K1=8.46 B2=15.67 1986MCd (50263) 515
B(CrHL)=11.50
For A=aspartate, B(CrAL)=19.84; B(CrHAL)=24.08

Cr+++ gl NaClO4 25°C 0.10M C M 1986MCd (50264) 516
B(CrAL)=18.82
B(CrHAL)=22.75
B(CrBL)=16.31
B(CrHBL)=20.21
A=glutamate; B=2-aminobutanoate. Also B(CrCL)=15.80, B(CrHCL)=19.82, C=ser-
inate. B(CrDL)=15.62, B(CrHDL)=19.53, D=threoninate
****
C6H14N2O2 HL Lysine CAS 56-87-1 (41)
2,6-Diaminohexanoic acid; H2N.(CH2)4.CH(NH2)COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl oth/un 25°C 0.50M U K1=8.1 B2=14.30 1963KMc (50821) 517
K3=5.3
****
C6H14N4O2 HL Arginine CAS 74-79-3 (40)
2-Amino-5-guanidopentanoic acid; H2N.CH((CH2)3.NH.C(:NH)(NH2)COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl oth/un 25°C 0.50M U K1=8.0 B2=14.10 1963KMc (51005) 518
K3=5.2
****
C6H15NO3 Triethanolamine CAS 102-71-6 (447)
Tris-(2-hydroxyethyl)amine; L

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl NaClO4 20°C 1.00M U K1=4.43 B2=7.79 1975KUa (51287) 519
B3=10.9
B(CrOCrL6)=14.9
B(CrOCrL8))=17.0
B(CrOCrL10)=18.7
****
C6H15N3 L CAS 4730-54-5 (26)
1,4,7-Triazacyclononane; cyclo(-NH.CH2.CH2.NH.CH2.CH2.NH.CH2.CH2-)

```
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C  1.0M C                         1999AGb (51405) 520
                                        K(LCr(u-NH2)2(u-OH)CrL+H)=-2.3
                                        K(LCr(u-NH2)2(u-O)CrL+H)=1.3
Reactions for K are: LCr(u-NH2)2(u-OH)CrL+H=L(OH)Cr(u-NH2)2Cr(H2O)L
and LCr(u-NH2)2(u-O)CrL+H=L(OH)Cr(u-NH2)2Cr(OH)L
**************************************************************************
C6H18N4                 L    Trien-tetramine  CAS 112-24-3  (11)
1,4,7,10-Tetraazadecane; H2N.CH2.CH2.NH.CH2.CH2.NH.CH2.CH2.NH2
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      gl  KCl    26°C 0.10M U T      K1=8.0         1965PGa (52094) 521
K1=7.71(20C)
**************************************************************************
C7H4N2O7              H2L                      CAS 609-99-4  (400)
3,5-Dinitrosalicylic acid; (O2N)2.C6H2(OH).COOH
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 0.10M U        K1=7.69        1995VDa (52473) 522
**************************************************************************
C7H5NO4               H2L    Quinolinic acid  CAS 89-00-9  (567)
2,3-Pyridinedicarboxylic acid; C5H3N.(COOH)2
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U                         1977CAb (52623) 523
                                        K(Cr+HL)=3.00
                                        K(Cr+2HL)=5.15
**************************************************************************
C7H5NO4               H2L                      CAS 499-80-9  (566)
2,4-Pyridinedicarboxylic acid; C5H3N.(COOH)2
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U                         1977CAb (52651) 524
                                        K(Cr+HL)=3.22
                                        K(Cr+2HL)=5.30
**************************************************************************
C7H5NO4               H2L                      CAS 100-26-5  (2528)
2,5-Pyridinedicarboxylic acid, Isocinchomeronic acid; C5H3N.(COOH)2
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C 0.50M U                         1977CAb (52666) 525
                                        K(Cr+HL)=2.70
                                        K(Cr+2HL)=4.50
**************************************************************************
```

C7H5NO4 H2L Dipicolinic aci CAS 449-83-2 (418)
2,6-Pyridinedicarboxylic acid; C5H3N.(COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	0.50M	U			1977CAb (52761)	526
							K(Cr+HL)=4.52		
							K(Cr+2HL)=7.64		

****
C7H5NO4 H2L Cinchomeronic CAS 490-11-9 (2852)
3,4-Pyridinedicarboxylic acid, Cinchomeronic acid; C5H3N.(COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	0.50M	C			1976CDa (52840)	527
							K(Cr+HL)=4.30		
							K(CrHL+HL)=1.60		

K corrected for Cr(OH), Cr2(OH)2 (lit.)
****
C7H5NO4 H2L Dinicotinic CAS 499-81-0 (2857)
3,5-Pyridinedicarboxylic acid; C5H3N.(COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	0.50M	U			1974DCb (52845)	528
							K(Cr+HL)=2.2		

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	alc/w	25°C	50%	U		K1=7.67	1978ZIa (53528)	529

****
C7H6O2 HL Benzoic Acid CAS 65-85-0 (462)
Benzenecarboxylic acid; C6H5.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sol	oth/un	25°C	0.5M	C			1984PBf (53826)	530
							Kout(Cr(DMSO)6+L)=0.81		
							Kout(Cr(DMSO)6+2L=1.45		

Medium: NaF
DMSO= dimethylsulfoxide, (CH3)2SO
****
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

Cr+++ gl NaNO3 25°C 0.10M U K1=12.50 1995VDa (54182) 531
****
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
---
Cr+++ gl NaNO3 25°C 0.10M U K1=10.57 1995VDa (54962) 532

Cr+++ gl NaClO4 25°C 0.10M U K1=9.56 1960BSb (54963) 533
****
C7H7NO2 HL Anthranilic CAS 118-92-3 (1589)
2-Aminobenzoic acid, Anthranilic acid; H2N.C6H4.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl NaClO4 25°C 0.10M U K1=4.35 B2=8.02 1968TKc (55215) 534
****
C7H10O2 L CAS 1670-46-8 (4416)
2-Acetylcyclopentanone;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 25°C 0.5M C K1=9.20 1998BLa (56709) 535

Cr+++ sp NaClO4 50°C 0.50M C K1=1.15 1994BSf (56710) 536
K(Cr+HL=CrL+H)=1.15

Cr+++ gl NaClO4 25°C 0.50M U K1=9.2 1992BHb (56711) 537
****
C7H12N2O6 H3L (2423)
Diaminomethane-N,N,N'-triethanoic acid; HOOC.CH2.NH.CH2.N(CH2.COOH)2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ kin NaClO4 25°C 1.00M U M 1979OSa (57182) 538
K(CrL+NO2)=0.32
****
C7H12O2 HL CAS 7424-54-6 (4421)
Heptane-3,5-dione; CH3.CH2.CO.CH2.CO.CH2.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 25°C 0.5M C K1=11.9 1998BLa (57242) 539

Cr+++ gl NaClO4 25°C 0.50M U K1=11.9 1992BHb (57243) 540
****
C7H12O4 HL CAS 96740-23-7 (2249)
1,5-Dimethoxy-pent-2,4-dione, CH3.O.CH2.CO.CH2.CO.CH2.O.CH3

```
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      gl  diox/w 24°C  50%  U        K1=5.4         1979ACa (57291) 541
*************************************************************************
C7H12O4               H2L                      CAS 534-59-8  (480)
Butylpropanedioic acid (Butylmalonic acid); HOOC.CH(C4H9).COOH
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      gl  NaClO4 30°C 0.10M U        K1=6.92   B2=12.46  1976DGd (57335) 542
                                         K3=3.87
*************************************************************************
C8H6O4                H2L    Phthalic acid    CAS 88-99-3  (113)
Benzene-1,2-dicarboxylic acid; C6H4(COOH)2
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      kin NaNO3  35°C  1.0M U T      K1=0.68        1979TKa (58962) 543
                                         K(Cr+HL)=0.35
-------------------------------------------------------------------------
Cr+++      gl  oth/un 25°C 0.10M U        K1=5.52   B2=10.00  1967HHa (58963) 544
                                         K3=2.48
*************************************************************************
C8H9NOS                HL                       CAS 4822-44-0  (3240)
N-(Mercaptoacetyl)aniline (thioglycolanilide); C6H5.NH.CO.CH2.SH
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      gl  diox/w 30°C  50%  U        K1=6.50   B2=10.72  1973ABb (60160) 545
Medium: 0.1 M NaClO4
*************************************************************************
C8H9NO2                HL                       CAS 4746-61-6  (4512)
Glycolanilide;
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      gl  diox/w 30°C  50%  U        K2=7.69        1973ABb (60251) 546
Medium: 50% dioxan, 0.1 M NaClO4
*************************************************************************
C8H9NO2S               HL                       CAS 6310-11-8  (4576)
3-Mercaptoacetamidophenol; HS.CH2.CO.NH.C6H4.OH
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Cr+++      gl  oth/un 17°C    ?  U        K1=6.73   B2=11.28  1973KPd (60383) 547
*************************************************************************
C8H11N5                 L                       CAS 702-02-3  (3202)
1-Phenylbiguanide; C6H5.NH.C(:NH).NH.C(:NH).NH2
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
```

```
-------------------------------------------------------------------------------
Cr+++      gl  none   32°C  0.0  U        K1=12.02  B2=19.83  1952BGb (61286) 548
*******************************************************************************
C8H12O2                HL                      CAS 874-23-7  (3203)
2-Acetylcyclohexanone;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  0.5M C        K1=12.1        1998BLa (61665) 549
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.50M U        K1=12.1        1992BHb (61666) 550
*******************************************************************************
C8H13NO6S              H3L                       (5675)
2-Mercapto-1-aminoethane-N,N,S-triethanoic acid; HOOC.CH2.S.CH2.CH2.N(CH2COOH)2
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      vlt NaClO4 25°C 0.10M U        K1=12.0        1975POa (61822) 551
                                         K(Cr+HL)=3.08
*******************************************************************************
C8H14N2O6              H3L                     CAS 688-57-3  (2422)
1,2-Diaminoethane-N,N,N'-triethanoic acid; HOOC.CH2.NH.CH2.CH2.N(CH2.COOH)2
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U    M                   1979OSa (61957) 552
                                         K(CrL+SCN)=1.09
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M C                        1975OWa (61958) 553
                                         *K(CrL(H2O))=-6.25
-------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  1.0M C    M                   1975OWa (61959) 554
                                         K(CrL(H2O)+A)=1.25
HA is ethanoic acid.
*******************************************************************************
C8H14O2                HL                      CAS 3002-23-1  (4485)
6-Methylheptane-2,4-dione; CH3.CO.CH2.CO.CH2.CH(CH3)2
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.50M U        K1=10.9        1992BHb (62051) 555
*******************************************************************************
C9H6NO4IS              H2L    Ferron           CAS 547-91-1  (275)
7-Iodo-8-hydroxyquinoline-5-sulfonic acid; (HO)(HO3S)C9H4NI
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  KNO3   25°C 0.10M C        K1=8.00   B2=14.88  1985ZHa (63783) 556
                                         K3=6.69
-------------------------------------------------------------------------------
```

```
Cr+++      gl  KNO3   28°C 0.10M U        K1=5.48        1971LSb (63784) 557
**************************************************************************
C9H7NO                  HL    Oxine            CAS 148-24-3  (504)
8-Hydroxyquinoline (8-quinolinol);
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      gl  alc/w  35°C  50%  U                        1970BBf (64243) 558
                                       K(CrL2+HL)=-2.18
                                       K(CrL+HL)=-3.60
Medium: 50% v/v EtOH, 0.1 M LiNO3
--------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U        K1=9.05        1970FKa (64244) 559
--------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M U        K1=9.76   B2=18.24  1968TKc (64245) 560
**************************************************************************
C9H7NO4S              H2L    Sulfoxine        CAS 84-88-8  (448)
8-Hydroxyquinoline-5-sulfonic acid;
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      gl  KCl    30°C 0.10M U        K1=10.99  B2=21.04  1966LAa (64529) 561
                                       K(CrOHL+H)=5.14
**************************************************************************
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
--------------------------------------------------------------------------
Cr+++      sp  alc/w  25°C  50%  U                        1967NPb (64699) 562
                                       K(Cr+HL)=10
Medium: 50% MeOH, 0.1 M NaClO4
**************************************************************************
C9H7N3O7                HL                     CAS 16533-70-3  (8484)
N-(3,5-Dinitrobenzoyl)glycine;
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 0.10M U    M   K1=3.70        1995VDa (64742) 563
                                       B(CrAL)=19.15
                                       B(CrBL)=15.71
                                       B(CrCL)=8.42
H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-
dinitrosalicylic acid.
**************************************************************************
C9H8N2O5                HL                     CAS 10167-23-4  (8486)
N-(2-Nitrobenzoyl)glycine;
--------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------
```

Cr+++ gl NaNO3 25°C 0.10M U K1=3.84 1995VDa (64836) 564
B(CrAL)=18.77
B(CrBL)=15.39
B(CrCL)=8.21
H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-dinitrosalicylic acid.

****

C9H8N2O5 HL CAS 617-10-7 (8487)
N-(3-Nitrobenzoyl)glycine;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaNO3	25°C	0.10M	U		K1=3.95	1995VDa	(64838) 565
							B(CrAL)=18.50		
							B(CrBL)=15.30		
							B(CrCL)=8.03		

H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-dinitrosalicylic acid.

****

C9H8N2O5 HL (7150)
N-(4-Nitrobenzoyl)glycine; NO2.C6H4.CO.NH.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaNO3	25°C	0.10M	U		K1=3.89	1995VDa	(64842) 566
							B(CrAL)=18.69		
							B(CrBL)=15.36		
							B(CrCL)=8.18		

H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-dinitrosalicylic acid.

****

C9H9NO3 HL Hippuric acid CAS 495-69-2 (1184)
Benzoylaminoethanoic acid, N-benzoylglycine; C6H5.CO.NH.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaNO3	25°C	0.10M	U		K1=3.98	1995VDa	(65055) 567
							B(CrAL)=18.42		
							B(CrBL)=15.28		
							B(CrCL)=7.89		

H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-dinitrosalicylic acid.

****

C9H16N2O6 H3L MEDTA CAS 40423-02-7 (5717)
N-Methyldiaminoethane-N,N',N'-triethanoic acid; HOOC.CH2.N(CH3)CH2.CH2.N(CH2.COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	0.10M	C			1975OWa	(67633) 568
							*K(CrL(H2O))=-6.25		

```
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  1.0M C    M                  1975OWa (67634) 569
                                        K(CrL(H2O)+A)=1.09
HA is ethanoic acid.
********************************************************************************
C10H7NO2               HL    Quinaldic acid   CAS 93-10-7  (2209)
Quinoline-2-carboxylic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      gl  KNO3   25°C 0.10M U        K1=8.90   B2=16.85  1988ZMa (68702) 570
                                        K3=7.45
********************************************************************************
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
--------------------------------------------------------------------------------
Cr+++      gl  KNO3   27°C 0.10M U        K1=4.45   B2= 6.85  1988AIa (69937) 571
--------------------------------------------------------------------------------
Cr+++      sp  KCl    25°C 0.50M U                   1974CMa (69938) 572
                                        K(2Cr+H2L=Cr2L+2H)=1.58
                                        K(CrHL+H2L=CrH2L2+H)=-1.75
                                        K(Cr+2HL=CrH2L2)=9.62
--------------------------------------------------------------------------------
Cr+++      sp  oth/un 25°C    ?  U        K1=8.21        1965BQa (69939) 573
********************************************************************************
C10H11NO3              HL                    CAS 500-98-1  (8485)
N-(Phenacetyl)glycine;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 0.10M U        K1=3.81        1995VDa (70929) 574
                                        B(CrAL)=18.84
                                        B(CrBL)=15.40
                                        B(CrCL)=8.27
H2A is salicylic acid, H2B is 5-sulfosalicylic acid, H2C is 3,5-
dinitrosalicylic acid.
********************************************************************************
C10H16N2O8             H4L    EDDS             CAS 52759-67-8  (1100)
1,2-Diaminoethane-N,N'-di-1,4-butanedioic acid; (CH2.NH.CH(COOH)CH2.COOH)2
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      gl  KNO3   30°C 0.10M U        K1=11.08       1971TSc (73117) 575
********************************************************************************
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
```

```
--------------------------------------------------------------------------------
Cr+++      gl  NaCl   25°C 0.10M U                      1985KLb (73677) 576
                                      K(CuL+H)=2.16
                                      *K(CrL)=-7.35
                                      *K(Cr(OH)L)=-12.35
--------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U    M                 1979OSa (73678) 577
                                      K(CrHL+NCS)=1.34
--------------------------------------------------------------------------------
Cr+++      ISE KCl    22°C 0.60M C        K1=23.1       1977ABa (73679) 578
--------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 0.10M C                      1975OWa (73680) 579
                                      K(CrL(H2O)+H)=1.8
                                      *K(CrL(H2O))=-7.39
--------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  1.0M C    M                 1975OWa (73681) 580
                                      K(CrL(H2O)+A)=-0.21
                                      K(CrL(H2O)+N3)=0.77
HA is ethanoic acid.
--------------------------------------------------------------------------------
Cr+++      EMF oth/un   ?     ?  U        K1=13.07      1972KOc (73682) 581
--------------------------------------------------------------------------------
Cr+++      sp  oth/un 20°C    ?  U        K1=12.8       1969RZa (73683) 582
                                      K(Cr+HL)=6.1
--------------------------------------------------------------------------------
Cr+++      vlt KCl    20°C 0.10M U      T K1=23.40      1964PSc (73684) 583
********************************************************************************
C10H17N3O6S           H3L    Glutathione      CAS 70-18-8  (333)
Glutamyl-cysteinyl-glycine;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      EMF KCl    25°C 0.15M C        K1=13.0   B2=19.50  2004AMa (75114) 584
                                      B(CrH2L)=20.6
                                      B(CrHL)=17.1
                                      B(CrH-1L)=7.4
Calculated using LETAGROP. Using Hyperquad values are: K1=12.7, B2=-18.8
B(CrH-1L)=7.4, B(CrH2L)=20.4, B(CrHL)=17.0
********************************************************************************
C10H18N2O7            H3L    HEDTA            CAS 150-39-0  (392)
N-(Hydroxyethyl)diaminoethane-N,N',N'-triethanoic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      kin NaClO4 25°C 1.00M U   HM                 1979OSa (75349) 585
                                      K(CrL+SCN)=1.13
                                      K(CrL+NO2)=0.28
                                      K(CrL+N3)=2.04
DH(CrL+N3)=52 kJ mol-1
--------------------------------------------------------------------------------
```

```
Cr+++      gl  NaClO4 25°C 0.10M C                        1975OWa (75350) 586
                                        *K(CrL(H2O))=-6.13
-------------------------------------------------------------------------------
Cr+++      sp  NaClO4 25°C  1.0M C    M                   1975OWa (75351) 587
                                        K(CrL(H2O)+A)=1.23
HA is ethanoic acid.
-------------------------------------------------------------------------------
Cr+++      gl  KNO3   25°C 0.10M U                        1972WSa (75352) 588
                                        K(CrLOH+H)=6.02
                                        K(CrH1LOH+H)=9.85
*******************************************************************************
C10H20O5                L    15-Crown-5       CAS 33100-27-5  (576)
1,4,7,10,13-Pentaoxacyclopentadecane; cyclo(-(O.CH2.CH2)5-)
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      con mixed  25°C  90%  C        K1=2.40        2003ISa (75981) 589
Medium: 90% v/v DMSO/H2O.
*******************************************************************************
C10H22N2O3              L    Cryptand 2,1     CAS 31249-95-3  (835)
4,7,13-Trioxa-1,10-diazacyclopentadecane (Trioxa(2,1)cryptand);
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  R4N.X  25°C 0.05M U        K1=9.1         1999BDb (76312) 590
Medium: Et4NClO4
*******************************************************************************
C10H24N4                L    Cyclam           CAS 295-37-4  (8)
1,4,8,11-Tetraazacyclotetradecane; cyclo(-(HN.CH2.CH2.NH.(CH2)3)2-)
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  oth/un 25°C  1.0M U T H                    2002EMa (76662) 591
                                        *K(cis-CrLA(HA))=-0.59
                                        *K(cis-CrL(H2O)2)=-3.490
                                        *K(cis-CrLA(H2O))=-6.122
Medium: 1.0 M NaBr. HA is ethanoic acid.
DH values from data at 25 and 40 C.
-------------------------------------------------------------------------------
Cr+++      gl  NaClO4 25°C 1.00M C                       1984EMa (76663) 592
                                        *K1(trans-CrL)=-3.05
                                        *K2(trans-CrL)=-7.39
*******************************************************************************
C11H11NO6            H3L                    CAS 1147-65-5  (425)
N-(2'-Carboxyphenyl)iminodiethanoic acid; HOOC.C6H4.N(CH2.COOH)2
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      sp  oth/un 25°C  dil  U        K1=9.40        1970DPb (77826) 593
*******************************************************************************
```

C11H12N2O2 HL Tryptophan CAS 73-22-3 (3)
2-Amino-3-(3-indolyl)propanoic acid; H2N.CH(CH2.C8H6N)COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	KNO3	40°C	1.00M	U	T		1990SKa (78194)	594
							Kout(Cr(H2O)6+L)=1.14		
							Kout(Cr(H2O)5(OH)+L)=1.09		

Also data at 45, 50 and 55 C

****

C11H20O2 HL Dipivaloylmeth. CAS 1118-71-4 (363)
2,2,6,6-Tetramethyl-3,5-heptanedione; (CH3)3C.CO.CH2.CO.C(CH3)3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	NaClO4	25°C	0.5M	C		K1=14.2	1998BLa (79744)	595
Cr+++	gl	NaClO4	25°C	0.50M	U		K1=14.2	1992BHb (79745)	596

****

C12H20N2O8 H4L CAS 40623-42-5 (1101)
1,2-Diaminoethane-N,N'-di(2-pentane-1,5-dioic acid); (CH2NHCH(COOH)CH2CH2COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	KNO3	30°C	0.10M	U		K1=11.88	1971TSc (82061)	597

****

C12H24O6 L 18-Crown-6 CAS 17455-13-9 (577)
1,4,7,10,13,16-Hexaoxacyclooctadecane;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	con	mixed	25°C	90%	C		K1=2.16	2003ISa (83311)	598

Medium: 90% v/v DMSO/H2O.

****

C12H26N2O4 L Cryptand 2,2 CAS 23978-55-4 (925)
4,7,13,16-Tetraoxa-1,10-diazacyclooctadecane;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	R4N.X	25°C	0.05M	U		K1=9.2	1999BDb (83822)	599

Medium: Et4NClO4

****

C12H28N4 L CAS 24772-41-6 (145)
1,5,9,13-Tetraazacyclohexadecane; cyclo(-(NH.CH2.CH2.CH2)4-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	NaClO4	25°C	1.00M	C			1984EMa (84195)	600
							*K1(cis-CrL)=-3.50		
							*K2(cis-CrL)=-7.10		

*K1(trans-CrL)=-2.81
*K2(trans-CrL)=-7.13
****
C13H11NO2 H2L CAS 78-75-2 (6258)
3-(Salicylideneamino)phenol; HO.C6H4.CH:N.C6H4.OH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl alc/w 25°C 50% U K1=12.10 B2=18.00 1977DWa (85083) 601
****
C13H11N3O4S2 HL Tenoxicam CAS 59804-37-4 (8393)
4-Hydroxy-2-methyl-N-2'-pyridinyl-2H-thien[2,2-e]-1,2-thiazine-3-carboxamide-1,1-di
oxide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl mixed 25°C 50% C K1=5.1 2002MWa (85288) 602
Medium: 50% v/v CH3CN/H2O, 0.05 M NaNO3.
****
C14H13NO2 HL CAS 889-29-2 (6259)
N-Salicylidene-3-methoxyaniline; HO.C6H4.CH:N.C6H4.OCH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl alc/w 25°C 50% U K1=7.70 B2=13.90 1977DWa (87526) 603
****
C14H20O5 L Benzo15-crown-5 CAS 14098-44-3 (608)
2,3-Benzo-1,4,7,10,13-pentaoxacyclopentadeca-2-ene;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ con mixed 25°C 90% C K1=2.53 2003ISa (88247) 604
Medium: 90% v/v DMSO/H2O.
****
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
---
Cr+++ gl NaClO4 20°C 1.0M C 1993BMb (89198) 605
K(CrL+Mn)=4.60
K(CrL+Co)=5.90
K(CrL+Fe)=4.95
K(CrL+Ni)=7.02
K(CrL+Cu)=8.85; K(CrL+Zn)=6.17
All cations (Mn, Fe, Co, Cu) refer to M++

Cr+++ gl NaClO4 20°C 1.00M C K1=22.05 1991BMc (89199) 606
B(CrHL)=28.18
B(CrH2L)=31.03

B(CrH3L)=32.48

Cr+++ sp oth/un 20°C ? U K1=15.36 1969KAf (89200) 607
K(Cr+HL)=8.84
K(Cr+H2L)=3.67

****

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
Cr+++	sp	NaClO4	25°C	0.50M	U		K1=2.54 B(Cr2L)=3.51	1966CHb (89852)	608

****

C14H28N2O4 L Cryptand 2,1,1 CAS 31250-06-3 (836)
1,10-Diaza-4,7,13,18-tetraoxabicyclo[8,5,5]eicosane (2,1,1);

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	R4N.X	25°C	0.05M	U		K1=11.4	1999BDb (90353)	609

Medium: Et4NClO4

****

C16H12N2O5S H3L SolochromeVio R CAS 94205-83-1 (4093)
1-(2'-Hydroxy-5'-sulfophenylazo)-2-naphthol;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	oth/un	75°C	0.0	U	T H	B2=17.25	1962CRa (93022)	610

B2=17.25(75 C),17.05(85,95 C),16.93(100 C). K(CrLOH+H)=6.88(25 C),6.58(40C),
DH=-32 kJ mol-1; K(CrL(OH)2+H)=9.82(25 C),9.41(40 C); K(CrL(OH)3+H)=12.12

****

C16H14N2O HL CAS 38214-71-0 (8453)
3-(2-Hydroxy-5-methylphenyl)-5-phenylpyrazole;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	diox/w	27°C	70%	C		K1=11.60 B2=20.50 K3=8.00	1994SNa (93419)	611

Medium: 70% v/v dioxane/H2O, 0.10 M NaClO4.

****

C16H16N2O2 H2L CAS 94-93-9 (2101)
N,N'-Bis(salicylidene)ethylenediamine;(HO(C6H4)CH:NCH2-)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	sp	oth/un	30°C	1.00M	U	M	K(CrL(H2O)OH+H=CrL(H2O)2)=8.02	1982PRb (93678)	612

Medium: LiClO4

****

C16H18N2O5S HL Penicillin V CAS 87-08-1 (943)

Phenoxymethylpenicillinic acid, 4-Thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	KNO3	25°C	0.10M	M	T H	K1=6.75	B2=11.75	1983SBc (93815)	613

Also data for 35 C. DH(B2)=5.0 kJ mol-1, DS(B2)=227 J K-1 mol-1.

****

C16H32N2O5 L Cryptand 2,2,1 CAS 31364-42-8 (837)
1,10-Diaza-4,7,13,16,21-pentaoxabicyclo[8,8,5]tricosane (2,2,1);

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	R4N.X	25°C	0.05M	U		K1=11.8	1999BDb (95188)	614

Medium: Et4NClO4

****

C16H36N4 L CAS 54622-44-5 (147)
5,5,7,12,12,14-Hexamethyl-1,4,8,11-tetraazacyclotetradecane;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	oth/un	25°C	1.0M	U	T H		2002EMa (95536)	615
							*K(cis-CrLA(HA))=-0.57		
							*K(cis-CrLA(H2O))=-6.010		
							*K(cis-CrLB(H2O))=-5.841		
							*K(cis-CrAC(H2O))=-5.787		

Medium: 1.0 M NaBr. HA is ethanoic acid, HB is pivalic acid, HC is benzoic
DH values from data at 25 and 40 C.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	oth/un	25°C	1.0M	U			2002EMa (95537)	616
							K(cis-CrL(H2O)2+A)=4.96		
							K(cis-CrLA(H2O)+A)=1.42		

Medium: 1.0 M NaBr. HA is ethanoic acid.

****

C17H16N2O2 HL CAS 65840-98-4 (8454)
3-(2-Hydroxy-5-methyphenyl)-5-(4-methoxyphenyl)pyrazole;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values		Reference	ExptNo
Cr+++	gl	diox/w	27°C	70%	C		K1=11.00	B2=19.55	1994SNa (96028)	617
							K3=7.70			

Medium: 70% v/v dioxane/H2O, 0.10 M NaClO4.

****

C18H36N2O6 L Cryptand 2,2,2 CAS 23978-09-8 (514)
1,10-Diaza-4,7,13,16,21,24-hexaoxabicyclo[8.8.8]hexacosane;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Cr+++	gl	R4N.X	25°C	0.05M	U		K1=9.9	1999BDb (98531)	618

Medium: Et4NClO4

****
C19H14O7S H4L Pyrocatechol Vi CAS 369596-29-2 (709)
Pyrocatechol Violet,
3-[3,4-Dihydroxyphenyl-3-hydroxy-4-oxo-2,5-cyclohexadien-1-ylidenemethyl-b.;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaClO4 25°C 0.10M U 1973CAa (99104) 619
K(Cr+H3L=CrH2L+H)=0.90
K(CrH2L+H3L=CrH3L2+2H)=-6.41
K(CrH3L2+H3L=CrH4L3+2H)=-8.60
Ligand: Pyrocatechol sulfophthalein
****
C19H19N7O6 H3L Folic acid CAS 75708-92-8 (194)
Pteroylglutamic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ gl KNO3 30°C 0.10M U I K1=3.12 B2=6.32 1970NDa (99285) 620
K3=3.30
I=0: K1=3.40, K2=3.35, K3=3.35. I=0.01: K1=3.30, K2=3.30, K3=3.35.
I=0.05: K1=3.15, K2=3.20, K3=3.35
****
C20H13N3O7S H3L Eriochrome Bl T CAS 1787-61-7 (997)
1-(1-Hydroxy-2-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ sp NaNO3 30°C 1.0M C T M 1994VLa (99562) 621
K(Cr(nta)+L)=2.26
Also data for 40 C (K=2.22) and 50 C (K=2.27).
****
C20H24O6 L DiBz-18-Crown-6 CAS 14187-32-7 (604)
2,3:11,12-Dibenzo-1,4,7,10,13,16-hexaoxacyclooctadeca-2,11-diene
---
Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ con mixed 25°C 90% C K1=2.33 2003ISa (100093) 622
Medium: 90% v/v DMSO/H2O.
****
C20H36O6 L DiCy-18-crown-6 CAS 16069-36-6 (1653)
2,3:11,12-Dicyclohexyl-1,4,7,10,13,16-hexaoxacyclooctadecane;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Cr+++ con mixed 25°C 90% C K1=2.46 2003ISa (100632) 623
Medium: 90% v/v DMSO/H2O.
****
C22H24N2O8 H2L Tetracycline CAS 60-54-8 (2201)
Tetracycline;

```
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  NaNO3  25°C 0.10M C        K1=9.0         1992GAa (101811) 624
*******************************************************************************
C24H32O8                L    DiBz-24-Crown-8  CAS 14174-09-5  (580)
2,3:14,15-Dibenzo-1,4,7,10,13,16,19,22-octaoxacyclotetracosa-2,14-diene;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      con mixed  25°C  90%  C        K1=3.16        2003ISa (103112) 625
Medium: 90% v/v DMSO/H2O.
*******************************************************************************
C24H44O8                L    Dicy-24-crown-8  CAS 17455-23-1  (2401)
2,3,14,15-Dicyclohexyl-1,4,7,10,13,16,19,22-octaoxacyclotetracosane;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      con mixed  25°C  90%  C        K1=3.23        2003ISa (103427) 626
Medium: 90% v/v DMSO/H2O.
*******************************************************************************
C26H25NO9S            H4L    Semi-Xylenol O     (426)
3-(N,N-Di(carboxymethyl)aminomethyl)-2-cresolsulfonephthalein;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      sp  alc/w  50°C  25%  U        K1=17.07       1980YMa (103944) 627
                                         K(CrL+H)=3.03
                                         K(CrL+H)=3.06 potentiometry
                                         K(Cr(OH)L+H)=7.08
                                         K(Cr(OH)L+H)=7.02 (pot.)
*******************************************************************************
C26H28N6                L                      CAS 16858-02-9  (933)
N,N,N',N'-Tetrakis-(2-pyridylmethyl)-diaminoethane;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      sp  none   25°C  0.0  C                       1999EGa (104001) 628
                                         *K(CrL(H2O))=-3.44
                                         K(CrL(H2O)+H=CrHL(H2O))=1.13
*******************************************************************************
C27H42O15             H3L    (OEOAcAcOE)3     CAS 62888-29-3  (2255)
1,4,10,13,16,22,25,28,34-Nonaoxacyclohexatriaconta-6,8,18,20,30,32-hexaone;
-------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------------
Cr+++      gl  diox/w 24°C  50%  U        K1=10.1        1979ACa (104599) 629
*******************************************************************************
C36H36N24O12            L    Cucurbituril     CAS 283175-97-3  (6744)
Cucurbit[6]uril;
```

```
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sol none   25°C  0.0  C        K1=2.34        2001BCe (106255) 630
Method: total organic carbon analysis of dissolved species.
For the homologous cucurbit[5]uril, K1=1.11.
********************************************************************************
C37H44N2O13S          H6L    MeThymol Blue      (428)
3,3'-Bis(N,N-di(carboxymethyl)aminomethyl)thymolsulfonephthalein;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      oth NaClO4 25°C 0.10M U                       1972CPf (106590) 631
                                        K(Cr+H4L=CrH3L+H)=0.81
                                        K(2Cr+H4L=Cr2H3L+H)=5.14
                                        K(Cr+H3L)=3.9
                                        K(2Cr+H3L)=8.2
********************************************************************************
Polymer                       DNA               (4185)
Deoxyribonucleic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  none   25°C  dil  C    M                  2002VVb (108145) 632
                                        K(CrA(H2O)2+L)=3.71
Ligand is calf thymus DNA. Medium: Hepes buffer, pH 7.0.
A is 1,2-bis(naphthylidineamino)ethane (naphen).
********************************************************************************
Polymer                                           (1642)
Polymethacrylic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Cr+++      sp  none   25°C 0.01M U    M                  2000RPa (108376) 633
                                        K(Cr(bpy)3+L)=2.33
                                        K(Cr(phen)3+L)=3.07
                                        K(CrA3+L)=5.34
                                        K(CrB3+L)=4.00
A:4,7-Dimethylphenanthroline, B: 4,7-Diphenylphenanthroline.
Medium: KH2PO4. Method: luminescence. Also data for L: Polyacrylic acid.

REFERENCES

  2004AMa  M Armas,A Maderos,F Brito et al.; Chem.Speciation and Bioavail.,16,45
(2004)
  2004RMa  D Rai,D Moore,N Hess,L Rao,S Clark; J.Solution Chem.,33,1213 (2004)
  2003ISa  V Ijeri,A Srivastava; Polyhedron,22,569 (2003)
  2003TMa  M Tabakci,S Memon,M Yilmaz,D Roundhill; J.Inclusion Phenom.,45,265
(2003)
  2002EMa  J Eriksen,L Monsted,O Monsted; Inorg.Chim.Acta,337,143 (2002)
```

2002MMa E Madej,O Monsted,P Kita; J.Chem.Soc.,Dalton Trans.,2361 (2002)
2002MWa H Mohamed,H Wadood,O Farghaly; J.Pharm.Biomed.Anal.,28,819 (2002)
2002RHa D Rai,N Hess,L Rao,Z Zhang,A Felmy; J.Solution Chem.,31,343 (2002)
2002VVb V Vaidyanathan,R Vijayalakshmi,B Nair; Bull.Chem.Soc.Jpn.,75,1143 (2002)
2001BCe H Buschmann,E Cleve,K Jansen; Anal.Chim.Acta,437,157 (2001)
2000CIa L Ciavatta,M Iuliano,A Vitiello; Ann.Chim.(Rome),90,169 (2000)
2000RPa S Ronco,B Persing,R Mortinsen; Inorg.Chim.Acta,308,107 (2000)
1999AGb P Anderson,J Glerup,A Gumm; Acta Chem.Scand.,53,391 (1999)
1999AVb R Al-Farawati,C Van den Berg; Marine Chem.,63,331 (1999)
1999BDb H-J Buschmann,D Dantz,E Cleve; J.Coord.Chem.,46,277 (1999)
1999EGa J Eriksen,P Goodson,J Rasmussen; Acta Chem.Scand.,53,1083 (1999)
1998BLa C Blanco; J.Chem.Soc.,Perkin Trans.II,2741 (1998)
1998FLa R Farrell,P Lay,A Levina; Inorg.Chem.,37,3159 (1998)
1998LDa S Lacour,V Deluchat,J-C Bollinger; Talanta,46,999 (1998)
1998ZJa S Ziemniak,M Jones,K Combs; J.Solution Chem., 27,33 (1998)
1997ANa P Andersen,K Nielsen,U Pretzmann; Acta Chem.Scand.,51,815 (1997)
1997BBd S Bhattacharyya,R Banerjee; Polyhedron,16,4217 (1997)
1997CLa R Codd,P Lay,A Levina; Inorg.Chem.,36,5440 (1997)
1996BFd R Bose,B Fonkeng,G Barr-David,P Lay; J.Am.Chem.Soc.,118,7139 (1996)
1996DSb A Drljaca,L Spiccia; Polyhedron,15,2875 (1996)
1996TEa B Tewari; J.Indian Chem.Soc.,73,349 (1996)
1995MDa P Maragh,T Dasgupta,D Williams; J.Chem.Soc.,Dalton Trans.,2843 (1995)
1995MPa V Mironov,G Pashkov et al; Zh.Neorg.Khim.,40,1670 (1995)
1995VDa V Kolhe,V Dhingra,K Dwivedi; Oriental J.Chem.,11,99 (1995)
1994AAa L Armijo,V Arancibia; Anal.Chim.Acta,298,91 (1994)
1994BSf C Blanco,J Sumillera; New J.Chem.,18,223 (1994)
1994CSb S Crimp,L Spiccia,H Krouse et al; Inorg.Chem.,33,465 (1994)
1994SNa P Sawalakhe,M Narwade,K Wadodkar; J.Indian Chem.Soc.,71,49 (1994)
1994TEa B Tewari; Zh.Neorg.Khim.,39,2037 (1950) (1994)
1994VLa H Visser,J Leipoldt,W Purcell; Polyhedron,13,1051 (1994)
1993ADa P Andersen,A Dossing; Acta Chem.Scand.,47,1 (1993)
1993BMb R Bucci,A Magri,A Magri,A Napoli; Thermochim.Acta,217,213 (1993)
1993MDa P Maragh,T Dasgupta; J.Chem.Soc.,Dalton Trans.,2401 (1993)
1993MMb L Monsted,O Monsted; Acta Chem.Scand.,47,9 (1993)
1992BHb C Blanco,J Hernando; J.Solution Chem.,21,1145 (1992)
1992GAa M Ghandour,H Azab et al; Monatsh.Chem.,123,51 (1992)
1992GTa M Grace,P Tregloan; Polyhedron,11,2069 (1992)
1992GTb M Grace,P Tregloan; Inorg.Chem.,31,4524 (1992)
1992WGa L Woo,J Goll et al; J.Am.Chem.Soc.,114,7411 (1992)
1992WJb W Watkins,T Jaeger et al; J.Am.Chem.Soc.,114,907 (1992)
1992WRa P Wrona; J.Electroanal.Chem.,322,119 (1992)
1991BBb M Bjerrum,J Bjerrum; Acta Chem.Scand.,45,23 (1991)
1991BMc R Bucci,A Magri,A Napoli; J.Coord.Chem.,24,169 (1991)
1991SMd L Spiccia,W Marty; Polyhedron,10,619 (1991)
1991ZGa K Zhang,A Gonzalez et al; J.Am.Chem.Soc.,113,9170 (1991)
1990BBb M Bjerrum,J Bjerrum; Acta Chem.Scand.,44,359 (1990)
1990DKb K-ud-Din,G Khan; Transition Met.Chem.,15,39 (1990)
1990HXa Z Hualin,Z Xu; Polyhedron,9,137 (1990)
1990JGa A Jhanji,E Gould; Inorg.Chem.,29,3890 (1990)
1990SKa M Shahid,I Khan et al; J.Chem.Soc.,Dalton Trans.,3007 (1990)

1989BHb C Blanco,J Hernando,M Mateo; Can.J.Chem.,67,1305 (1989)
1989LJa F Lloret,M Julve et al; J.Chem.Soc.,Dalton Trans.,729 (1989)
1989MSg T Merakis,L Spiccia; Australian J.Chem.,42,1579 (1989)
1989SSb H Stunzi,L Spiccia,F Rotzinger et al; Inorg.Chem.,28,66 (1989)
1988AAa K Ashley,J Ashley; Inorg.Chem.,27,990 (1988)
1988AIa N Abdel-Ghani,Y Issa; Thermochim.Acta,125,163 (1988)
1988SJa M Sisley,R Jordan; Inorg.Chem.,27,4483 (1988)
1988WCa J Winter,D Caruso,R Shepherd; Inorg.Chem.,27,1086 (1988)
1988ZMa M Zaky,M Moawad,S Stefan; Oriental J.Chem.,4,247 (1988)
1987HJa B Holmberg,K Jarring; Inorg.Chem.,26,1713 (1987)
1987KSe I Khan,M Shahid,K-ud-Din; Transition Met.Chem.,12,393 (1987)
1987MSb N Miralles,A Sastre,M Aguilar; Polyhedron,6,2145 (1987)
1987RSa D Rai,B Sass,D Moore; Inorg.Chem.,26,345 (1987)
1987SEa M Segal; J.Chem.Soc.,Dalton Trans.,2485 (1987)
1987SJa M Sisley,R Jordan; Inorg.Chem.,26,2833 (1987)
1987SMc O Staseuk,V Masalovich,A Aleshechkina; Zh.Neorg.Khim.,32,1374(828)
(1987)
1986ADa P Andersen,A Dossing,K Nielsen; Acta Chem.Scand.,A40,142 (1986)
1986BTa P Bhargava,M Tyagi; Indian J.Chem.,25A,193 (1986)
1986HOa M Hynes,C O'Mara,D Kelly; Inorg.Chim.Acta,120,131 (1986)
1986JDa D Jahagirdar,C Dhat; Indian J.Chem.,25A,392 (1986)
1986LRa Luo Qinhui,J Ren,M Shen,Q Tu; Acta Chimica Sinica,906 (1986)
1986LSa Luo H Q,Sheng M C,Ding Y,Tu Q Y,Dai; Acta Chimica Sinica,568 (1986)
1986MCd J Maslowska,L Chruscinski; Polyhedron,5,1131,1135 (1986)
1986MNa K Micskei,I Nagypal; J.Chem.Soc.,Dalton Trans.,2721 (1986)
1986SGd S Singh,D Gupta,H Yavada,P Yavada; Z.Phys.Chem.(Leipzig),267,902;1008
(1986)
1986SKd J Sharma,A Kumar,B Puri,M Satake; Polyhedron,5,805 (1986)
1986WFa H Waki,Q Feng,K Tsuruta,S Ohashi; Polyhedron,5,1239 (1986)
1985KLb J Korsse,G Leurs,F Louwrier; Talanta,32,451 (1985)
1985LXa Luo Qinhui,Xhen M C,Ding Y,Tu Q Y,Dai; Acta Chimica Sinica,1138 (1985)
1985MAa P Moritzen,A El-Awady,G Harris; Inorg.Chem.,24,313 (1985)
1985MMf L Monsted,O Monsted; Acta Chem.Scand.,A39,615 (1985)
1985SKe J Sharma,A Kumar,B Puri; J.Chin.Chem.Soc.(Taipei),32,425 (1985)
1985ZHa M Zaky,W Hanna,E Nour,H Killa; Anal.Lett.,18,803 (1985)
1984ABa M Abdullah,J Barrett,P O'Brien; J.Chem.Soc.,Dalton Trans.,1647 (1984)
1984BPd P Bizunok,M Pyartman,A Belousov; Zh.Neorg.Khim.,29,720 (1984)
1984EMa J Eriksen,O Monsted; Acta Chem.Scand.,A38,775 (1984)
1984MMi G Men'shenina,V Masalovich; Zh.Neorg.Khim.,29,1096 (1984)
1984PBf A Pyartman,M Bizunok,E Belousovl; Zh.Neorg.Khim.,29,2833 (1984)
1984PBg A Pyartman,M Bizunok,E Belousovl; Zh.Neorg.Khim.,29,2963 (1984)
1984SIa J Sircar; J.Chem.Eng.Data,29,141 (1984)
1984SRa H Stunzi,F Rotzinger,W Marty; Inorg.Chem.,23,2160 (1984)
1984WRd P Wrona; Inorg.Chem.,23,1558 (1984)
1984YSa H Yadava,S Singh,P Prasad et al; Bull.Soc.Chim.Fr.,I,314 (1984)
1983MDb K Micskei,F Debreczeni,I Nagypal; J.Chem.Soc.,Dalton Trans.,1335 (1983)
1983RCa G Ramos,M Coque; Talanta,30,777 (1983)
1983SBc S Sawhney,A Bansal; Thermochim.Acta,60,229 (1983)
1983SMb H Stunzi,W Marty; Inorg.Chem.,22,2145 (1983)
1983VNa K Venkatachalapathi,M Nair,D Ramaswamy; J.Indian Chem.Soc.,60,1175

(1983)
1982CGa R Cannon,M Gholami; Bull.Chem.Soc.Jpn.,55,594 (1982)
1982GMa E Garcia-Espana,J Moratal,J Faus; J.Coord.Chem.,12,41 (1982)
1982MSa K Mehta,K Sharma,R Mehta; Indian J.Chem.,21A,86 (1982)
1982MSd V Mironov,P Shnurova et al; Koord.Khim.,8,172 (1982)
1982MSg V Mironov,T Shchnurova et al.; Zh.Neorg.Khim.27,378;382 (1982)
1982PRb D Prasad,T Ramasami,D Ramaswamy et al; Inorg.Chem.,21,850 (1982)
1982VNa K Venkatachalapathi,M Nair et al; J.Chem.Soc.,Dalton Trans.,291 (1982)
1981AWa Y Abe,G Wada; Bull.Chem.Soc.Jpn.,54,3334 (1981)
1981DSa S Dubey,A Singh,D Puri; J.Inorg.Nucl.Chem.,43,407 (1981)
1981MCa J Maslowska,L Chruscinski; J.Inorg.Nucl.Chem.,43,3398 (1981)
1981TCb M Thompson,R Connick; Inorg.Chem.,20,2279 (1981)
1980KHa C Krishnamoorthy,G Harris; J.Coord.Chem.,10,55 (1980)
1980YMa T Yoshino,S Murakami,H Takesue et al; J.Inorg.Nucl.Chem.,42,579 (1980)
1979ACa A Alberts,D Cram; J.Am.Chem.Soc.,101,3545 (1979)
1979OSa H Ogino,M Shimura,N Tanaka; Inorg.Chem.,18,2497 (1979)
1979SDc A Singh,S Dubey et al; Indian J.Chem.,17A,623 (1979)
1979SSd J Siefker,R Shah; Talanta,26,505 (1979)
1979TKa S Tyagi,A Khan; J.Chem.Soc.,Dalton Trans.,420 (1979)
1978MBd A Magri,F Balestrieri,E Chiacchierini; Ann.Chim.(Rome),68,589 (1978)
1978ZIa S Zaidi,V Islam,K Siddiqi; Indian J.Chem.,16A,265 (1978)
1977ABa P Andersen,T Berg et al; Acta Chem.Scand.,A31,219 (1977)
1977AMc E Abbott,J Mayer; J.Coord.Chem.,7,135 (1977)
1977CAa L Campanella et al; Ann.Chim.(Rome),67,385 (1977)
1977CAb E Chiacchierini,G D'Ascenzo et al; Ann.Chim.(Rome),67,195 (1977)
1977CHa E Chiacchierini et al; Ann.Chim.(Rome),67,547 (1977)
1977DWa K Dubey,B Wazir; Indian J.Chem.,15A,58 (1977)
1977GGa B Gahan,D Garner,L Hill et al; J.Chem.Soc.,Dalton Trans.,1726 (1977)
1977HSc Y Hojo,Y Sigiura,H Tanaka; J.Inorg.Nucl.Chem.,39,1859 (1977)
1977KMa V Kornev,I Mukanov,M Konukhov; Zh.Fiz.Khim.,51,1380 (1977)
1977MSg V Mironov,Yu Solov'ev,V Ivanova; Zh.Neorg.Khim.,22,3371 (1977)
1976AMb A Aleshechkina,V Masalovich et al; Zh.Neorg.Khim.,21,1775(973) (1976)
1976BDa A Bailey,S Dutta-Chaudri et al; J.Chem.Soc.,Dalton Trans.,2103 (1976)
1976CDa E Chiacchierini,G D'Ascenzo et al; Gazz.Chim.Ital.,106,19 (1976)
1976CGa R Cannon,M Gholami; J.Chem.Soc.,Dalton Trans.,1574 (1976)
1976DGd N Dutt,S Gupta; Indian J.Chem.,14A,1000 (1976)
1976DHb I Dellien,L Hepler; Can.J.Chem.,54,1383 (1976)
1976KAb T Kallen; Inorg.Chem.,15,440 (1976)
1976MMd L Monsted,O Monsted; Acta Chem.Scand.,A30,203 (1976)
1976RSb T Ramasami,A Sykes; Inorg.Chem.,15,1010 (1976)
1976RSc T Ramasami,A Sykes; Inorg.Chem.,15,2885 (1976)
1976STa Y Sulfab,R Taylor,A Sykes; Inorg.Chem.,15,2388 (1976)
1976STb J Springborg,H Toftlund; Acta Chem.Scand.,A30,171 (1976)
1976TNa B.Thumerel,J Nicole; Compt.Rend.,282C,327 (1976)
1975ABa P Andersen,T Berg et al; Acta Chem.Scand.,A29,381 (1975)
1975ABb P Andersen,T Berg et al; Acta Chem.Scand.,A29,599 (1975)
1975BRa G Biedermann,V Romano; Acta Chem.Scand.,A29,615 (1975)
1975BUa J Biernat,J Urbanska,M Zralko; Rocz.Chem.49,2095 (1975)
1975CPc E Chiacchierini,V Petrone,A Magri; Gazz.Chim.Ital.,105,205 (1975)
1975CSc R Cannon,J Stillman; Inorg.Chem.,14,2202 (1975)

1975KKa V Kornev,S Kharitonova,L Ionov; Zh.Fiz.Khim.,49,3058 (1975)
1975KKc P Khadikar,S Kakkar,D Berge; Indian J.Chem.,13,844 (1975)
1975KUa M Kunaszewska; Rocz.Chem.49,821 (1975)
1975LMa G Lalor,H Miller; J.Inorg.Nucl.Chem.,37,1832 (1975)
1975MAa V Masalovich,A Aleshechkina et al; Zh.Neorg.Khim.,20,2987(1652) (1975)
1975MMf J McCann,A McAuley; J.Chem.Soc.,Dalton Trans.,783 (1975)
1975OMa M Olatunji,A McAuley; J.Chem.Soc.,Dalton Trans.,682 (1975)
1975OWa H Ogino,T Watanabe,N Tanaka; Inorg.Chem.,14,2093 (1975)
1975POa J Podlahova; Collec.Czech.Chem.Commun.,40,3306 (1975)
1975TRa P Tedesco,V de Rumi; J.Inorg.Nucl.Chem.,37,1833 (1975)
1974CMa E Chiacchierini,A Margri et al; Ann.Chim.(Rome),64,725 (1974)
1974DCb G D'Ascenzo,E Chiacchierini et al; Gazz.Chim.Ital.,104,607 (1974)
1974LAa A Lassocinska; Rocz.Chem.48,867 (1974)
1974TKb N Tanaka,T Kano,H Ogino,A Yamada; Bull.Chem.Soc.Jpn.,47,3064 (1974)
1974TKc T Takahashi,T Koiso,N Tanaka; Nippon Kagaku Kaishi,65 (1974)
1973ABb K Apte,A Bhattacharya; J.Inorg.Nucl.Chem.,35,3924 (1973)
1973BFb R Burdykina,A Falicheva; Isvest.VUZ.Khim.,16,3,476 (1973)
1973BQa N Bartlett,D Quane; Inorg.Chem.,12,1925 (1973)
1973CAa E Chiacchierini,G D'Angelis et al; Gazz.Chim.Ital.,103,387;413 (1973)
1973CHb M Couldwell,D House,H Powell; Australian J.Chem.,26,425 (1973)
1973KPd S Kakkar,N Poonia,P Khadikar; J.Inorg.Nucl.Chem.,35,3021 (1973)
1973MSc U Meyenberg,O Siroky et al; Helv.Chim.Acta,56,1099 (1973)
1973TRc P Tedesco,V Rumi et al; J.Inorg.Nucl.Chem.,35,285;287 (1973)
1973ULa I Umova, B Lobov et al .; Zh.Neorg.Khim.,18,836 (1973)
1973VBa P Vielen,A Bonniol; Compt.Rend.,276C,1769 (1973)
1972CPf E Chiacchierini,V Petrone,A Magri et al; Gazz.Chim.Ital.,102,911 (1972)
1972FAa S Frank,F Anson; Inorg.Chem.,11,2938 (1972)
1972IJa H Irving,R Jarrah; Anal.Chim.Acta,60,345 (1972)
1972KBd V Konev,A Brandt; Zh.Neorg.Khim.,17,3127(E:1645) (1972)
1972KOc V Kornev; Zh.Fiz.Khim.,46,2676 (1972)
1972MHb K Muirhead,G Haight,J Beattie; J.Am.Chem.Soc.,94,3006 (1972)
1972MRe V Mironov,G Ragulin,I Umova et al; Zh.Fiz.Khim.,46,257(E:155) (1972)
1972TRa P Trujillo; An.Quim.,68,1373 (1972)
1972WSa R Wharton,A Sykes; J.Chem.Soc.,Dalton Trans.,2404 (1972)
1971CAa N Calu,G Agrigoraei; Anal.Sti.Univ.Iasi,Sec.I.C.,17,139 (1971)
1971FHa W Fee,J Harrowfield,C Garner; Inorg.Chem.,10,290 (1971)
1971HGb D Hoppenjans,G Gordon,J Hunt; Inorg.Chem.,10,754 (1971)
1971JFb L Jeftic,S Feldberg; J.Phys.Chem.,75,2381 (1971)
1971KGa A Klygin,V Glebov,V Lekae et al; Zh.Neorg.Khim.,16,1590(E:840) (1971)
1971LSb P Lingaiah,E Sundaram; J.Indian Chem.Soc.,48,961 (1971)
1971MCa J Mason,C Cummiskey; J.Inorg.Nucl.Chem.,33,137 (1971)
1971MSg M Mishra,R Sanyal; Technology,8,34 (1971)
1971NOa B Norden; Acta Chem.Scand.,25,2516 (1971)
1971PBa D Purohit,J Bjerrum; J.Inorg.Nucl.Chem.,33,2067 (1971)
1971PPb J Podlaha,J Podlahova; Inorg.Chim.Acta,5,413 (1971)
1971PPc J Podlaha,J Podlahova; Inorg.Chim.Acta,5,420 (1971)
1971PWb D Palmer,D Watts; Inorg.Chem.,10,281 (1971)
1971RHa R la Rossa,J Hunt; Unpublished results (1971)
1971ROa O Rollins; J.Inorg.Nucl.Chem.,33,75 (1971)
1971TKa J Templeton,E King; J.Am.Chem.Soc.,93,7160 (1971)

1971TSc S Tak,O Sunar,C Trivedi; Indian J.Chem.,9,1394 (1971)
1971WEa R Wang,J Espenson; J.Am.Chem.Soc.,93,1629 (1971)
1971WSb D Wakefield,W Schaap; Inorg.Chem.,10,306 (1971)
1970BBf D Banerjee,P Banerjee; Z.Anorg.Allg.Chem.,374,108 (1970)
1970BIb J Birk; Inorg.Chem.,9,735 (1970)
1970BMc L Burlamacchi,G Martini,E Tiezzi; J.Phys.Chem.,74,1809 (1970)
1970CHb A Cunningham,D House,H Powell; Australian J.Chem.,23,2375 (1970)
1970CHe S Chan,K Hui; Z.Anorg.Allg.Chem.,372,345 (1970)
1970CKa D Carlyle,E King; Inorg.Chem.,9,2333 (1970)
1970DIa H Diebler; Ber.Buns.Phys.Chem.,74,268 (1970)
1970DPb C Dragulescu,R Pomoje,I Menessy et al; Rev.Roumaine Chim.,15,1029 (1970)
1970DSa G Davies,N Sutin,K Watkins; J.Am.Chem.Soc.,92,1892 (1970)
1970EAb J Earley,W Alexander; J.Am.Chem.Soc.,92,2294 (1970)
1970FKa Y Fukuda,E Kyuno,R Tsuchiya; Bull.Chem.Soc.Jpn.,43,745 (1970)
1970GAa A Garnier; J.Chim.Phys.,67,1458 (1970)
1970KLf I Kaganskii,N Lopatina; Zh.Neorg.Khim.,15,9,2333 (1970)
1970MKb J Mason,A Kowalak,R Tuggle; Inorg.Chem.,9,847 (1970)
1970MKc C Mills,E King; J.Am.Chem.Soc.,92,3017 (1970)
1970MSd H Mizuochi,S Shirakata,E Kyuno et al; Bull.Chem.Soc.Jpn.,43,397 (1970)
1970NDa R Nayan,A Dey; Z.Naturforsch.,25B,1453 (1970)
1970PPa J Podlaha,J Podlahova; Inorg.Chim.Acta,4,521 (1970)
1970SKa T Swaddle,P Kong; Can.J.Chem.,48,3223 (1970)
1970TQa P Tedesco,J Quintana; J.Inorg.Nucl.Chem.,32,2689 (1970)
1970VVa V Vasileva,V Vasilev; Isvest.VUZ.Khim.,13,1,21 (1970)
1969BAb I Baldea; Stud.Univ.Babes-Bolyai,77 (1969)
1969BEd D Bustin,J Earley,A Vlcek; Inorg.Chem.,8,2062 (1969)
1969GTa S Goyal,J Tandon; Talanta,16,106 (1969)
1969KAf V Krumina,K Astakhov,S Barkov; Zh.Fiz.Khim.,43,611;1196;2792 (1969)
1969MHa E Mercer,J Hormuth; J.Inorg.Nucl.Chem.,31,2145 (1969)
1969NBb G Niac,I Baldea et al; Stud.Univ.Babes-Bolyai,83 (1969)
1969RCb L Rich,D Cole,E Eyring; J.Phys.Chem.,73,713 (1969)
1969RZa V Rud,N Zhirnova,K Astakhov; Zh.Fiz.Khim.,43,3,607 (1969)
1969SCa J Schlegel; J.Phys.Chem.,73,4152 (1969)
1969SSd D Seewald,N Sutin,K Watkins; J.Am.Chem.Soc.,91,7307 (1969)
1969SWb L Scott,T Weeks,D Bracken,E King; J.Am.Chem.Soc.,91,5219 (1969)
1969VPa E Verdier,J Piro; Ann.Chim.,(France),4,213 (1969)
1969WSa D Wakefield,W Schaap; Inorg.Chem.,8,512 (1969)
1969WSb D Wakefield,W Schaap; Inorg.Chem.,8,811 (1969)
1968BGc J Burgess,B Goodman,J Raynor; J.Chem.Soc.(A),501 (1968)
1968BNe I Baldea,G Niac; Inorg.Chem.,7,1232 (1968)
1968CHb S Chan,K Hui; Australian J.Chem.,21,3061 (1968)
1968DSc J Doyle,A Sykes,A Adin; J.Chem.Soc.(A),1314 (1968)
1968EPb J Espenson,O Parker; J.Am.Chem.Soc.,90,3689 (1968)
1968FBb S Frenneson,J Beattie,G Haight; J.Am.Chem.Soc.,90,6018 (1968)
1968FDa E Fischerova,O Dracka,M Meloun; Collec.Czech.Chem.Commun.,33,473 (1968)
1968HRd G Haight,M Rose,J Preer; J.Am.Chem.Soc.,90,4809 (1968)
1968LNc A Lunyatskas,P Norkus; Zh.Neorg.Khim.,13,665 (1968)
1968MHa D Morris,S Hammond; Electrochim.Acta,13,545 (1968)
1968MLb J Morrow,J Levy; J.Phys.Chem.,72,885 (1968)
1968PWa D Palmer,D Watts; Australian J.Chem.,21,2895 (1968)

1968SGh T Swaddle,G Guastalla; Inorg.Chem.,7,1915 (1968)
1968STb P Staples; J.Chem.Soc.(A),2731 (1968)
1968TKa T Tomita,E Kyuno,R Tsuchiya; Bull.Chem.Soc.Jpn.,41,1130 (1968)
1968TKc S Takata,E Kyuno,R Tsuchiya; Bull.Chem.Soc.Jpn.,41,2416 (1968)
1968WSc C Wells,M Salam; J.Am.Chem.Soc.,1568 (1968)
1968WSd C Wells,M Salam; J.Chem.Soc.(A),1568 (1968)
1967AHa S Ahrland; Helv.Chim.Acta,50,306 (1967)
1967ASb M Ardon,N Sutin; Inorg.Chem.,6,2268 (1967)
1967CHb S Chan; J.Chem.Soc.(A),2103 (1967)
1967DEb N Duffy,J Earley; J.Am.Chem.Soc.,89,272 (1967)
1967ESb J Espenson,S Slocum; Inorg.Chem.,6,906 (1967)
1967GAb A Garnier; Compt.Rend.,265B,198 (1967)
1967HHa K Higashi,K Hori,R Tsuchiya; Bull.Chem.Soc.Jpn.,40,2569 (1967)
1967HKa C Hale,E King; J.Phys.Chem.,71,1779 (1967)
1967KHb H Kelm,G Harris; Inorg.Chem.,6,706,1743 (1967)
1967KLb K Kyong,L Lebedeva; Vestnik Leningr.Univ.,16 (1967)
1967NKa Y Narusawa,M Kanazawa,S Takahashi et al; J.Inorg.Nucl.Chem.,29,123 (1967)
1967NPb G Nickless,F Pollard,T Samuelson; Anal.Chim.Acta,39,37 (1967)
1967PWa D Palmer,D Watts; Australian J.Chem.,20,53 (1967)
1967RBb K Rohatgi,P Bhattacharya; Indian J.Chem.,5,195 (1967)
1967SKf Y Sannikov,E l Krylov,V Vinogradov; Zh.Neorg.Khim.,12,2651 (1967)
1967TYa N Tanaka,A Yamada; Zh.Anal.Khim.,224,117 (1967)
1966ASb A Adin,A Sykes; J.Chem.Soc.(A),1518 (1966)
1966CHb E Chiacchierini; Ricerca Sci.,36,1016 (1966)
1966EBa J Espenson,D Binau; Inorg.Chem.,5,1365 (1966)
1966LAa K Lal,R Agarwal; J.Indian Chem.Soc.,43,169 (1966)
1966LAb S Lahiri,S Aditya; J.Indian Chem.Soc.,43,513 (1966)
1966MPb R Mercier,M Paris; Compt.Rend.,349,598 (1966)
1966MTa H Muro,R Tsuchiya; Bull.Chem.Soc.Jpn.,39,1589 (1966)
1966TJa J Tong,R Johnson; Inorg.Chem.,5,1902 (1966)
1966TOa N Tanaka,K Ogino-Ebata,G Sato; Bull.Chem.Soc.Jpn.,39,366 (1966)
1966TPb K Tripathy,R Patnaik; J.Indian Chem.Soc.,43,772 (1966)
1966WMb J Walker,C Monk; J.Chem.Soc.(A),1372 (1966)
1965BQa S Banerji,S Qureshi; Bull.Chem.Soc.Jpn.,38,720 (1965)
1965HPb G Haight,E Perchonok et al; J.Am.Chem.Soc.,87,3835 (1965)
1965HSa A Haim,N Sutin; J.Am.Chem.Soc.,87,4210 (1965)
1965JBa K Jones,J Bjerrum; Acta Chem.Scand.,19,974 (1965)
1965MBb R Mercier,M Bonnet,M Paris; Bull.Soc.Chim.Fr.,2926;3577 (1965)
1965MOa M Matsukawa,M Ohta,S Takata,R Tsuchiya; Bull.Chem.Soc.Jpn.,38,1235 (1965)
1965NUa K Nagata,A Umayahara,R Tsuchiya; Bull.Chem.Soc.Jpn.,38,1059 (1965)
1965PGa R Pecsok,R Garber,L Shields; Inorg.Chem.,4,447 (1965)
1965PHa J Preer,G Haight; J.Am.Chem.Soc.,87,5256 (1965)
1965SCe J Schlegel; J.Phys.Chem.,69,3638 (1965)
1965SKa T Swaddle,E King; Inorg.Chem.,4,532 (1965)
1965SLc T Stengle,C Langford; J.Phys.Chem.,69,3299 (1965)
1965SMc W Schaefer,M Mathison; Inorg.Chem.,4,431 (1965)
1964BKa R Baltisberger,E King; J.Am.Chem.Soc.,86,795 (1964)
1964GHc F Guzzetta,W Hadley; Inorg.Chem.,3,259 (1964)

1964HRa G Haight,D Richardson,N Coburn; Inorg.Chem.,3,1777 (1964)
1964JKa J Jayne,E King; J.Am.Chem.Soc.,86,3989 (1964)
1964KLa O Kolling,J Lambert; Inorg.Chem.,3,202 (1964)
1964OMa M Ohta,H Matsukawa,R Tsuchiya; Bull.Chem.Soc.Jpn.,37,692 (1964)
1964PSc R Pecsok,L Shields,W Schaefer; Inorg.Chem.,3,114 (1964)
1964SDa S Sangal,A Dey; Chim.Anal.,46,223;492 (1964)
1964THd G Thompson; Thesis,U.of Cal.,Berkeley,UCRL-11410 (1964)
1964WEb H Wenger; Diss.Univ.Zurich (1964)
1963ASa K Al-Komser,B Sen; Inorg.Chem.,2,1219 (1963)
1963FLc P Flood,T Lewis,D Richards; J.Chem.Soc.,2446 (1963)
1963GKc A Golub,R Kostrova; Ukr.Khim.Zh.,29,784 (1963)
1963JRa H Johnson,W Reynolds; Inorg.Chem.,2,468 (1963)
1963KMa A Khan,W Malik; Indian Chem.Soc.,40,564 (1963)
1963KMb A Khan,W Malik; J.Indian Chem.Soc.,1963,40,564 (1963)
1963KMc A Khan,W Malik; J.Indian Chem.Soc.,40,564 (1963)
1963MSc M Muzaffaruddin,A Salahuddin,W Malik; J.Indian Chem.Soc.,40,467 (1963)
1963TUa R Tsuchiya,A Umayahara; Bull.Chem.Soc.Jpn.,36,554 (1963)
1962CRa E Coates,B Rigg; Trans.Faraday Society,58,88;2058 (1962)
1962FCa J Faucherre,A Crego; Bull.Soc.Chim.Fr.,1820 (1962)
1962FTa N Fogel,J Tai,J Yarborough; J.Am.Chem.Soc.,84,1145 (1962)
1962LUa O Lukkari; Suomen Kem.,B35,91 (1962)
1962PEc J Podlaha,M Ebert; Zh.Neorg.Khim.,7,2185 (1962)
1962SCd G Schwarzenbach; Pure & Appl.Chem.,5,377 (1962)
1962SMb G Schwarzenbach,B Magyar; Helv.Chim.Acta,45,1425,1454 (1962)
1961BAa E Baumgartel; Z.Anorg.Chem.,307,255;265 (1961)
1961BDa S Banerji,A Dey; J.Indian Chem.Soc.,38,121 (1961)
1961EPa M Ebert,J Podlaha; Collec.Czech.Chem.Commun.,26,753 (1961)
1961GUa F Guzzetta; Thesis,Ohio Univ.Diss.Abs.22,3382 (1961)
1961MAg W Malik,S Ali; J.Inorg.Nucl.Chem.,20,155 (1961)
1961SOd F Sherif,W Oraby; J.Inorg.Nucl.Chem.,17,152 (1961)
1960ADb A Adamson; J.Inorg.Nucl.Chem.,13,275 (1960)
1960BHf E Baumgartel, Habil-Schrift; Thesis,Dresden (1960)
1960BSb C Banks,R Singh; J.Inorg.Nucl.Chem.,15,125 (1960)
1960EKa J Espenson,E King; J.Phys.Chem.,64,380 (1960)
1960NVa N Nikolaev,S Vlasov,Y Buslaev et al; Izv.Sib.Otd.Akad.Nauk SSR,47 (1960)
1960TRa S Tribalat; J.Electroanal.Chem.,1,443 (1960)
1959BMa I Bagbanly,M Mamedkulieva; Azerb.Khim.Zh.,4 (1959)
1959DBb A Dey,S Banerji; Proc.Symp.Chem.of Coord.Comp.,Agra,198 (1959)
1959EGb K Emerson,W Graven; J.Inorg.Nucl.Chem.,11,309 (1959)
1959TIa C Timberlake; J.Chem.Soc.,2795 (1959)
1958BJa J Bjerrum,C Jorgensen; J.Inorg.Nucl.Chem.,8,313 (1958)
1958DMa E Davies,C Monk; J.Am.Chem.Soc.,80,5032 (1958)
1958FMa G Fowles,W McGregor; J.Chem.Soc.,136 (1958)
1958GHb D Grant,R Hamm; J.Am.Chem.Soc.,80,4166 (1958)
1958GKa H Gates,E King; J.Am.Chem.Soc.,80,5011 (1958)
1958POa V Podchainova; Zh.Anal.Khim.,13,193 (1958)
1958SKa K Schug,E King; J.Am.Chem.Soc.,80,1089 (1958)
1958WOa F Woldbye; Acta Chem.Scand.,12,1079 (1958)
1958YFa K Yatsimirskii,T Fedorova; Isvest.VUZ.Khim.,3,40 (1958)
1957CHb B Charreton; Compt.Rend.,244,1208 (1957)

1957DSa N Dutt,B Sur; Z.Anorg.Chem.,293,195 (1957)
1957EVa D Evans; J.Chem.Soc.,4013 (1957)
1957HSc J Hougen,K Schug,E King; J.Am.Chem.Soc.,79,519 (1957)
1957PBa R Pecsok,J Bjerrum; Acta Chem.Scand.,11,1419 (1957)
1957SCf G Schaffer; Personal communication (1957)
1956BAb I Bagbanly; Dokl.Akad.Nauk Azerbaid.SSR,12,459 (1956)
1956CHc V Chukhlantsev; Zh.Anal.Khim.,11,529 (1956)
1956DZa E Deltombe,N de Zoubov,M Pourbaix; Cebelcor Rapp.Tech.,29;31;32;33;35;41 (1956)
1956GAb H Gates; Thesis,Univ.Wiscon.,Univ.Microf.16163 (1956)
1956GHb D Grant,R Hamm; J.Am.Chem.Soc.,78,3006 (1956)
1956KOb P Kovalenko; Ukr.Khim.Zh.,22,801 (1956)
1956WGa W Wilmarth,H Graff,S Gustin; J.Am.Chem.Soc.,78,2683 (1956)
1956YFa K Yatsimirskii,T Fedorova; Zh.Neorg.Khim.,1,2310 (1956)
1955BKa M Bobtelsky,S Kertes; Bull.Soc.Chim.Fr.,328 (1955)
1955PAa A Paul; Thesis,Univ.California,Berkeley,UCRL-292 (1955)
1955PKa C Postmus,E King; J.Phys.Chem.,59,1208;1216 (1955)
1954JOa C Jorgensen; Acta Chem.Scand.,8,175 (1954)
1954PBa K Poulsen,J Bjerrum,I Poulsen; Acta Chem.Scand.,8,921 (1954)
1954SHb S Shuttleworth; J.Soc.Leather Trades Chemists,38,110 (1954)
1953CTa R Connick,M Tsao; Am.Chem.Soc.,Abstract 123rd Meeting,4 (1953)
1952ALa A Albert; Biochem.J.,50,690 (1952)
1952BGb D Banerjee,N Ghosh,P Ray; J.Indian Chem.Soc.,29,157 (1952)
1952CBb G Cunningham,R Burley,M Friend; Nature,169,1103 (1952)
1952CWa M Cohen,F Westheimer; J.Am.Chem.Soc.,74,4387 (1952)
1952HOa F Holloway; J.Am.Chem.Soc.,74,224 (1952)
1952LAb W Latimer; "Oxidation Potentials",Prentice Hall,NY (1952)
1952WTa A Wilson,H Taube; J.Am.Chem.Soc.,74,3509 (1952)
1951HSb R Hamm,C Shull; J.Am.Chem.Soc.,73,1240 (1951)
1951ZHa F Zharovskii; Trudy An.Khim.Akad.Nauk SSSR,3,101 (1951)
1948SBa G Schwarzenbach,W Bierdermann; Helv.Chim.Acta,31,331;456;678 (1948)
1947HKa W Harris,I Kolthoff; J.Am.Chem.Soc.,169,446 (1947)
1943HKa D Hume,I Kolthoff; J.Am.Chem.Soc.,65,1897 (1943)
1939DBa S Durban,D Brown; J.Phys.Chem.,43,491 (1939)
1938OKa Y Oka; J.Chem.Soc.Jpn.,59,971 (1938)
1937RUa M Rumpf; Ann.Chim.,(France),8,456 (1937)
1932BEa W Bennett; Trans.Faraday Society,28,889 (1932)
1928BVa J Brondted,K Volqvartz; Z.Phys.Chem., 134,97 (1928)
1927GBb G Grube,G Breitinger; Z.Elektrochem.,33,112 (1927)
1926BJa N Bjerrum; Ergebn.Exakt Naturwissenschaft,5,125 (1926)
1926GSa G Grube,L Schlecht; Z.Elektrochem.,32,178 (1926)
1924FWa R Fricke,O Windhausen; Z.anorg.Chem., 132,273 (1924)
1921BJa N Bjerrum; Z.Anorg.Chem.,119,179 (1921)
1921LFa A Lamb,G Fonda; J.Am.Chem.Soc.,43,1154 (1921)
1910BJa N Bjerrum; Z.Phys.Chem.,73,724 (1910)
1907BJa N Bjerrum; Z.Phys.Chem.,59,336 (1907)
1890REa A Recoura; Compt.Rend.,110,1029;1193 (1890)

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