

SC-Database

Software version = 5.81 Data version = 4.62

Experiment list contains 101 experiments for

(no ligands specified)

2 metals : Nb(V), Nb++++

(no references specified)

(no experimental details specified)

e- HL Electron (442)

Electron;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
-----Nb(V) vlt oth/un 25°C 1.00M U 1965MHb (709) 1
K'=14.40, 426 mV

K': Nb6Cl12++++ + 2e=Nb6Cl12++.

Nb(V) vlt oth/un 25°C 12MM U 1954CVa (710) 2
K(Nb+e)=-3.60, -213 mV

Medium 12 M HCl

Nb(V) oth none 25°C 0.0 U 1952LAb (711) 3
K=-54.4(-650 mV)
K(Nb(III)+3e)=-56 (-1100 mV)

K: 0.5Nb2O4(s)+5H+5e=Nb(s)+2.5H2O. From thermodynamic data

Nb(V) EMF oth/un 18°C 6.25M U I 1938GGa (712) 4
K=-10.84(-313 mV)Medium:H2SO4. K: Nb+2e=Nb(III). At I=4.95 M: K=-10.74(-310 mV), 3 M: -12.02
(-347 mV). Also at 18 C. At I=0: K(NbO+2H+2e=Nb(III)+H2O)=-11.88(-343 mV)-----
Nb(V) EMF oth/un 25°C 9.87M U I 1928KHa (713) 5
K=-14.41(-426.1 mV)Medium: H2SO4. K(Nb+2e=Nb(III). At I=5.9: K=-13.02(-384.9 mV), I=3: -12.62
(-373.0 mV)

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

Bromide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
-----Nb(V) sp oth/un 25°C var M 1973LJb (2150) 6
K(NbOOL4+H+L=NbOL5+H2O)=-5.2

Medium: HBr

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

Chloride;

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

Nb(V) cal non-aq 25°C 100% U HM 1993DSb (5278) 7
 Metal:Nb(IV). Medium:iso-Propyl ether. DH(Nb(H-1A)2B2(s)+2HL=NbL2(H-1A)2+2HB)=-216.4 kJ mol-1. A:Cyclopentadiene. B:CH3. Also for B=PhS and p-ClC6H4S

Nb(V) dis KCl var U 1968SSf (5279) 8
 Kd(Nb+4Cl+3TBP(benzene))=-1.8

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

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

 Nb(V) ISE non-aq ? 100% C 1978GRa (7039) 9
 K6=6.88
 K(NbF5+NbF6=Nb2F11)=1.32
 Medium: liquid anhydrous HF

 Nb(V) sp mixed ? 20% U 1973LCa (7040) 10
 K(NbH2O2+F)=2.62
 K(NbH2O2+2F)=1.72
 K(NbH2O2+3F)=1.58
 K(NbH2O2+4F)=1.52
 Medium: 20% H2SO4

 Nb(V) ISE NaClO4 25°C 0.50M U 1972LOa (7041) 11
 K(NbOF2+F)=3.80
 K(NbOF3+F)=4.30
 K(NbOF4+F)=4.51
 K(NbOF5+F)=4.67
 Medium: (Na,H)ClO4. Nb(V)=NbO+++. K(NbOF6+2H+F=NbF7+H2O)=11.4;
 K(NbF7+F)=3.08, K(NbF8+F)=4.0

 Nb(V) EMF KCl 25°C 3.0M U 1970NEb (7042) 12
 K(Nb(OH)2F4+F)=2.51

 Nb(V) dis NaClO4 25°C 5.0M U T 1969ESa (7043) 13
 K6K7=10.66

 Nb(V) sp oth/un ? 17.0M U K1=7.12 1969PEc (7044) 14
 Medium: H2SO4

 Nb(V) sol KNO3 18?°C 0.50M U 1967BNd (7045) 15
 Ks(Nb(OH)2F(s))=-5.22
 K(Nb(OH)4F+HF=Nb(OH)4F2+H)=3.6
 K(Nb(OH)4F+F)=6.8
 In 3 M HNO3: Ks(Nb(OH)4F2(s)=Nb(OH)4F2)=-4.82, K(Nb(OH)3F2+HF=Nb(OH)2F3)=4.2

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	cal	non-aq	25°C	100%	U	HM		1993DSb (8273)	16
Metal:Nb(IV). Medium: Toluene or iso-Propyl ether. DH(Nb(H-1A)2B2(s)+2I2=NbI2(H-1A)+2BI)=-289.9 kJ mol ⁻¹ . A:Cyclopentadiene. B:CH3. *****									
OH-		HL				Hydroxide	(57)		
Hydroxide;									
Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	gl	KCl	25°C	3.00M	C	I		1994EFa (11777)	17
							K(Nb6O19+H=HNb6O19)=13.63		
							K(Nb6O19+2H=H2Nb6O19)=23.55		
							K(Nb6O19+3H=H3Nb6O19)=32.90		
Values at I=0 corr: K=16.11, K(Nb6O19+2H)=27.97, K(Nb6O19+3H)=39.91. K(Nb2O5(s)+5H2O=2Nb(OH)5)=-9.71. K(6Nb(OH)5=H3Nb6O19+5H)=-14.46.									
Nb(V)	dis	NaClO4	25°C	0.10M	U			1970GFb (11778)	18
							*B(NbO2+H2O=NbO2OH+H)=-3.2		
Medium: LiClO4 *****									
O2--		H2L				Peroxide	CAS 7772-84-1 (2813)		
Peroxide; -0.0-									
Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C	95%	U	T H		1971VZa (12683)	19
							K(NbOS04+H2L)=3.67		
Medium:95% H2SO4. K=3.83(15 C), 3.53(35 C), 3.41(45 C). DH=-25 kJ mol ⁻¹ 63% H2SO4. K=2.73(25 C), 2.56(35 C), 2.42(45 C). DH=-29									
Nb(V)	sp	oth/un	0°C	10%	U			1969CKa (12684)	20
							K(NbOS04+H2L)=5		
Medium: 10% H2SO4									
Nb(V)	EMF	KCl	0°C	1.0M	U			1969SPc (12685)	21
							K(3NbO2L+H=HNb3O6L3)=13.08		
K(3NbL3+3H2O+H=HNb3O3L6+3H2L)=4.50. In 3 M KCl: K(NbL4+OH=NbOL3+HL)=1.5, K(HNbOL3+H2L+OH=NbL4+2H2O)=3.3									
Nb(V)	sp	oth/un	?	var	U			1966BNa (12686)	22
							K(Nb(OH)4HL+H)=2.7		
Nb(V)	sp	mixed	23°C	97%	U			1957AHb (12687)	23
							K(2Nb(V)+3H2L)=12.70		
Medium: 97.2% H2SO4.									
Nb(V)	sp	oth/un	?	96%	U			1956SSc (12688)	24

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo	
Nb(V)	sp	alc/w	?	100%	U	I		K1=3.58 B3=9.23	B2=6.74	1964GSc (15186)	25

S04-- H2L Sulfate CAS 7664-93-9 (15)
Sulfate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	ix	oth/un	20°C	var	U			K(NbO(OH)2+L)=1.7	1969MNC (16395)	26

Medium: H₂SO₄. By distribution: $K(\text{NbO}(\text{OH})_2 + 2\text{L} + 2\text{H} = \text{NbO}(\text{OH})_2 + 2\text{H}_2\text{O}) = 3.12$
 In NH₄HSO₄: $K(\text{NbO}(\text{OH})_3 + \text{L} + \text{H} = \text{NbO}(\text{OH})_2 + \text{H}_2\text{O}) = 1.09$

Nb(V) sp oth/un 22°C 10.0M U 1966GAc (16396) 27
B(Nb(III)4Nb2)=4.3?

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	EMF	aIc/w	20°C	100%	U				1971GSa (17891)	28
								$K(\text{Nb}+3\text{L}=\text{Nb}(\text{H}-1\text{L})_3+3\text{H}) > 1$		
								$K(\text{Nb}(\text{H}-1\text{L})_3+\text{H}-1\text{L})=14.3$		

Medium: MeOH, 1 M Me₄NCl

Nb(V)	EMF a1c/w	20°C 100%	U	M	1965GBa (17892)	29
					$K(NbA(L')_4 + 2L' = Nb(L')_6 + A) = 5.1$	
					$K(Nb(H-1L)_4 + A) = 10.84$	
					$K(NbA(H-1L)_3 + L) = 12.4$	
					$K(Nb(L')_5 + HA = NbA(L')_4 + L) = 5.18$	

Method: H electrode. Medium: MeOH, 1.0 M Me₄NCl. L'=H-1L; HA=acetylacetone

Nb(V)	EMF	a1c/w	20°C	100%	U	M	1965GBa (17893)	30
							$K(NbAL'3+H2A+L'=NbA2L'2)=13.9$	
							$K(NbA2L'2+H2A+L'=NbA3L')=7.0$	
							$K(NbA(L')3+L'=NbA(L')4)=7.89$	
							$K(NbAL'4+NbAL'3=Nb2A2L'7)=2.5$	

Method: H electrode. Medium: MeOH, 1.0 M Me₄NCI. L'=H-1L; H₂B=catechol

Nb(V) EMF alc/w 20°C 100% U 1964GUa (17894) 31

K(Nb(H-1L)4+H-1L)=10.45
K(Nb(H-1L)5+H-1L)=5.45
K(Nb(H-1L)6+H=Nb(H-1L)5)=6.15
K(Nb(H-1L)7+H=Nb(H-1L)6)=11.15

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

Nb(V) EMF alc/w 20°C 100% U 1964GUa (17895) 32

K(NbO(H-1L)2+H-1L)=10.51
K(NbO(H-1L)4+H)=6.03

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

C2H2NBr L CAS 590-17-0 (4217)
Cyanomethyl bromide; Br.CH2.CN

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

Nb(V) nmr non-aq -60°C 100% U M 1971MBa (18364) 33

K(NbCl5A+L=NbCl5L+A)=0.99
K(NbCl5B+L=NbCl5L+B)=0.43

Medium: CHCl3. A=cyanomethyl fluoride, B=cyanomethyl chloride

Nb(V) nmr non-aq -60°C 100% U M 1971MBa (18365) 34

K(NbCl5A+L=NbCl5L+A)=0.55
K(NbCl5A+L=NbCl5L+A)=0.37

Medium: CHCl3. A=cyanomethyl fluoride, B=POCl3

C2H2NI L CAS 624-75-9 (4219)
Cyanomethyl iodide; I.CH2.CN

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

Nb(V) nmr non-aq -60°C 100% U M 1972MBb (18366) 35

K(NcCl5A+L=NbCl5L+A)=0.75
K(NbCl5B+L=NbCl5L+B)=1.18
K(NbCl5C+L=NbCl5L+C)=0.64

Medium: CHCl3. A=cyanomethyl bromide, B=cyanomethyl chloride, C=Et2O

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

Nb(V) sol NaClO4 ? ? U 1970ZPa (18980) 36

K3=6.17

Metal ion is NbO+++ . Medium : HClO4

Nb(V) sol oth/un 18°C 0.50M U B2=35.9 1968BMb (18981) 37

Metal ion is NbO+++

Nb(V) sol oth/un 18°C 0.50M U 1968BMb (18982) 38
K(NbO(OH)2+L)=9.08

Nb(V) dis NaCl 20°C 4.50M U 1967K0d (18983) 39
Medium: 4.5(NaCl or NaNO3+2.5 M H). K(Nb(OH)4+H2L=Nb(OH)4HL+H)=3.55
K(Nb(OH)4+2H2L=Nb(OH)2L2+2H)=5.13

Nb(V) EMF oth/un 25°C 0.50M U 1967NSb (18984) 40
K(Nb(OH)4+2HL)=12.11
K(Nb(OH)4+2HL+L)=17.15

C2H3N L Cyanomethane CAS 75-05-8 (1399)
Acetonitrile; CH3.CN

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
Nb(V) nmr non-aq -60°C 100% U M 1974GMa (19189) 41
K(NbBr5A+L=NbBr5L+A)=0.15
Medium: CH2Cl2. A=t-butylcyanide

Nb(V) nmr non-aq -60°C 100% U M 1972MBb (19190) 42
K(NbCl5A+L=NbCl5L+A)=0.46
Medium: CHCl3. A=1,4-dioxan

Nb(V) nmr non-aq -60°C 100% U M 1971MBa (19191) 43
K(NbCl5A+L=NbCl5L+A)=0.76
Medium: CHCl3. A=1-chloro-4-cyanobenzene. K=0.34, A=cyanobenzene;
K=0.68, A=cyanoethane; K=0.38, A=dimethylether.

C2H6NOC12P L CAS 667-43-0 (910)
Dichloro(dimethylamine)phosphine oxide; (CH3)2N.P(O)Cl2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
Nb(V) nmr non-aq -60°C 100% U M 1974GMa (21900) 44
K(NbBr5A+L=NbBr5L+A)=0.72
Medium: CH2Cl2, A=acetonitrile

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

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
Nb(V) nmr non-aq -40°C 100% U M 1972MBb (22019) 45
K(NbCl5A+L=NbCl5L+A)=0.08
Medium: CHCl3. A=dioxan. K=0.38, A=1-chloro-4-cyanobenzene (-60 C)

Nb(V) nmr non-aq -60°C 100% U M 1971MBa (22020) 46
K(NbCl5A+L=NbCl5L+A)=0.38
Medium: CHCl3. A=1-chloro-4-cyanobenzene

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1974GMA (22190)	47	

K(NbBr5A+L=NbBr5L+A)=1.52

Medium: CH₂Cl₂, A=t-butylcyanide

Nb(V)	nmr	non-aq	-60°C	100%	U	M		1972MBb (22191)	48	
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K(NbCl5A+L=NbCl5L+A)=1.32

Medium: CHCl₃. A=t-butylnitride

 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
Nb(V)	dis	NaCl	20°C	4.50M	U	T		1967K0d (24509)	49	

Medium: 4.5(NaCl or NaNO₃+2.5 HCl). K(Nb(OH)₄+H₂L=Nb(OH)₄HL+H)=1.72

 C3H9O4P L CAS 512-56-1 (2431)
 Trimethyl phosphate; (CH₃O)₃P=O

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1972BMb (28024)	50	

K(NbCl5L+A=NbCl5A+L) > 2.0

K(NbCl5OPCl₃+L=NbCl5L+OPCl₃) > 7.0, . A=tris(dimethylamino)phosphine oxide

Medium: CHCl₃

 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
Nb(V)	dis	NaCl	20°C	4.50M	U			1967K0d (30004)	51	

K(Nb(OH)₄+H₂L=Nb(OH)₄HL+H)=1.53, Medium: (NaCl or NaNO₃+2.5 HCl)

 C4H6O5 H2L Malic acid CAS 617-48-1 (393)
 2-Hydroxybutane-1,4-dioic acid, Hydroxy-succinic acid; HOOC.CH₂.CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	dis	NaCl	20°C	4.50M	U			1967K0d (30682)	52	

K(Nb(OH)₄+H₂L=Nb(OH)₄HL+H)=2.01. Medium: NaCl or NaBO₃ + 2.5 M HCl

 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
Nb(V)	dis	KCl	20°C	1.00M	U			B2=33.5	1971LFc (31314)	53
Metal ion: NbO+++										
Nb(V)	oth	oth/un	?	?	U			K1=25.15 B2=33.00	1969EMa (31315)	54
Metal ion: NbO+++										
Nb(V)	dis	NaCl	20°C	4.50M	U				1967K0d (31316)	55
K(Nb(OH)4+H2L=Nb(OH)4HL+H)=2.34. Medium: NaCl or NaNO3 + 2.5 M HCl										

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
Nb(V)	dis	KNO3	20°C	2.00M	U				1969K0b (31898)	56
K(NbO2+H2L)=4.82										
Medium: HNO3										

C4H8OS L 1,4-Thioxane CAS 15980-15-1 (4266)										
1,4-Oxathiane; cyclo(-O.CH2.CH2.S.CH2.CH2-)										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M			1972MBb (33190)	57
K(NbCl5A+L=NbCl5L+A)=0.08										
Medium: CHCl3. A=t-butyl nitrile										

C4H8S L CAS 110-01-0 (150)										
Tetrahydrothiophene; cyclo(-CH2.CH2.S.CH2.CH2-)										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U				1972MBb (33739)	58
K(NbCl5A+L=NbCl5L+A)=1.80										
A=t-butyl mercaptan. Medium: CHCl3										

C4H8S2 L 1,4-Dithiane CAS 505-29-3 (4255)										
1,4-Dithiane; cyclo-(S.CH2.CH2.S.CH2.CH2-)										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U				1972MBb (33743)	59
K(NbCl5A+L=NbCl5L+A)=0.16										
A=t-butyl nitrile. Medium: CHCl3										

C4H10O L Ether CAS 60-29-7 (3573)										
Diethyl ether (ethyl ether, ethoxyethane); C2H5.O.C2H5										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1972MBb (34652)	60	
K(NbCl1A+L=NbCl1L+A)=0.11										
A=cyanomethyl bromide. Medium: CHCl3. When A=cyanomethyl chloride, K=0.54										

C4H10S		L						CAS 352-93-2 (4259)		
Diethyl sulfide; C2H5.S.C2H5										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1974GMA (34719)	61	
K(NbBr5A+L=NbBr5L+A)=0.59										
A=t-butyl nitrile. Medium: CH2Cl2										

Nb(V)	nmr	non-aq	-40°C	100%	U	M		1972MBb (34720)	62	
K(NbCl5A+L=NbCl5L+A)=0.66										
A=dimethyl ether. Medium: CHCl3. When A=acetone, K=0.88										

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
Nb(V)	EMF	non-aq	20°C	100%	U	M		1971GSa (38035)	63	
K(NbA5+HL=NbA4L+HA)=5.18										
K(NbA3L+A)=12.40										
K(NbA4L+2A=NbA6+L)=5.06										
Medium: CH3OH, 1 M Me4NCl. A=CH3OH										

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1974GMA (38453)	64	
K(NbBr5A+L=NbBr5L+A)=1.68										
Medium: CH2Cl2, A=dimethylether										

Nb(V)	nmr	non-aq	-60°C	100%	U	M		1972MBb (38454)	65	
K(NbCl5A+L=NbCl5L+A)=0.42										
Medium: CHCl3. A=dimethyl ether. When A=1,4-dioxan, K=0.50										

Nb(V)	nmr	non-aq	-60°C	100%	U	M		1971MBa (38455)	66	
K(NbCl5A+L=NbCl5L+A)=0.04										
Medium: CHCl3. A=cyanomethane. When A=cyanoethane, K=0.72										

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	alc/w	25°C	50%	U			K(NbOL2+L)=4.83	1967LSb (43419)	67
Medium: 50% EtOH, 0.1 M (NH4)2SO4										

C6H6O2			H2L	Catechol				CAS 120-80-9 (534)		
1,2-Dihydroxybenzene, pyrocatechol; H0.C6H4.OH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	EMF	alc/w	20°C	100%	U	M		K(NbA3L+A)=7.89 K(NbA3L+NbA4L=Nb2A7L2)=2.50 K(NbA3L+H2L+A=NbA2L2+2HA)=13.9 K(NbA2L2+H2L+A=NbAL3+2HA)=6.98	1971GSa (43797)	68
Medium: MeOH, 1.0 M Me4NCl. HA=CH3OH										

C6H6O3			H3L	Pyrogallol				CAS 87-66-1 (696)		
1,2,3-Trihydroxybenzene; C6H3(OH)3										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	23°C	96%	U			K(Nb(V)+H3L)=5.62	1981BVa (43971)	69
Medium: 96% H2SO4. In 85%: K(Nb(V)+H3L)=2.30										

C6H7NO3S			HL					CAS 599-71-3 (4398)		
Benzenesulfohydroxamic acid; C6H5.SO2.NH.OH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	20°C	1.0M	U	M			1971GVa (45071)	70
Medium: 1-10 M HCl. K(NbOC15+2H2L=(H2L)2NbOC15)=4.91										

C6H8O6			H2L	Ascorbic acid				CAS 50-81-7 (285)		
Ascorbic acid (Vitamin C);										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U			K1=9.4	1966SAb (45649)	71

C6H8O7			H3L	Citric acid				CAS 77-92-9 (95)		
2-Hydroxypropane-1,2,3-tricarboxylic acid; H0OCCH2.CH(OH)(COOH).CH2COOH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	dis	oth/un	20°C	4.50M	U				1967K0d (46195)	72
Medium: 4.5(NaCl or NaNO3+2.5 HCl). K(Nb(OH)4+H3L=Nb(OH)4H2L+H)=2.94 ?										

 C6H12O7 HL Gluconic acid CAS 526-95-4 (904)
 D-Gluconic acid, 2,3,4,5,6-Pentahydroxyhexanoic acid; HO.CH2(CHOH)4.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	gl	oth/un	25°C	0.10M	U				1968LOb (49738)	73
								K(Nb(OH)n+L)=2.78		
								K(Nb(OH)nH-1L+H)=7.82		

 C7H4NCl L CAS 1885-81-0 (4433)
 1-Chloro-4-cyanobenzene; Cl.C6H4.CN

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M			1971MBa (52380)	74
								K(NbCl5A+L=NbCl5L+A)=1.91		

A=cyanomethyl bromide. When A=cyanomethyl iodide, K=1.16

 C7H5N L Cyanobenzene CAS 100-47-0 (4406)
 Cyanobenzene, benzonitrile; C6H5.CN

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M			1971MBa (52569)	75
								K(NbCl5A+L=NbCl5L+A)=0.04		

Medium: CHCl3. A=dimethyl ether

 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
Nb(V)	sp	oth/un	25°C	0.04M	U				1962BVa (54266)	76
								K(NbO+2L)=22.60		

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	20°C	0.10M	U				1964SHa (54685)	77
								K(NbO2+H3L=NbO2LH2+H)=2.3		
								K(NbO2LH2+H3L=NbOL2H2+H)=1.3		
								K(NbO2+3HL+4H)=63.1		

 C7H7NO3 H2L CAS 89-73-6 (204)
 2-Hydroxybenzohydroxamic acid (salicylhydroxamic acid); HO.C6H4.CO.NHOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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 Nb(V) sp oth/un 20°C dil U M 1972LVa (55604) 78
 $K(NbOCl_5+2H_3L)=4.58$

 C9H6N2O5S H2L CAS 5263-74-1 (2738)
 7-Nitroso-8-hydroxyquinoline-5-sulfonic acid;

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

Nb(V) gl alc/w 27°C 50% C H $K_1=6.15$ $B_2=11.53$ 1986EAa (63877) 79

 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

Nb(V) sp alc/w 25°C 50% U 1967NPb (64716) 80
 $K(NbO_3+H_2L)=9.5(?)$

Medium: 50% MeOH, 0.1 M NaClO4

 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

Nb(V) sp NaCl 20°C 0.10M U I 1964SHa (69962) 81
 $K(NbO_2+3L+4H)=64.7$

In 3 M NaClO4: $K(NbO_2+2H+2L)=42.5$

 C10H12O5 H3L CAS 121-79-9 (3895)
 3,4,5-Trihydroxybenzoic acid propyl ester; (HO)3.C6H2.CO.O.CH2.CH2.CH3

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

Nb(V) sp mixed 22°C 5% U 1968LSc (71685) 82
 $K(?)=3.48$

Medium: 5% 1-PrOH, carbonate buffer

 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

Nb(V) dis KNO3 20°C 2.0M U 1969KKf (73986) 83
 $K(NbO_2+H_3L)=10.54$

Nb(V) vlt KCl ? 0.40M U $K_1=39.4$ 1969SVd (73987) 84

Nb(V) vlt oth/un 20°C 1.0M U 1967VSd (73988) 85
 $K(Nb(OH)_2+L)=40.78$

 C11H9N3O2 H2L PAR CAS 1141-59-9 (636)
 4-(2'-Pyridylazo)-1,3-dihydroxybenzene; C5H4N.N:N.C6H3(OH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C	?	U			K(?)=4.3	1967ADa (77564)	86

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	dis	KCl	20°C	1.0M	U			B((NbO)L3)=53.1	1971LFC (85167)	87

 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
Nb(V)	sp	oth/un	?	?	U			B((NbO)L2)=8.33	1968ADa (86745)	88

 C14H15N4OBr HL CAS 14337-50-9 (5095)
 5-(5-Bromo-2-pyridylazo)-2-ethylamino-4-hydroxy-1-methylbenzene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U	M		K(NbOA+L)=20.63	1969EMa (87766)	89

H2A=tartaric acid.

 C14H16N4O HL PAAC CAS 13059-69-3 (5067)
 5-Ethylamino-4-methyl-2-(2'-pyridylazo)phenol;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U	M		K(NbOA+L)=21.0	1969EMa (88019)	90

H2A=tartaric acid

 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
Nb(V)	vlt	oth/un	25°C	2.0M	U			K(?)=15.60 pH 5	1970PLa (88728)	91

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	KCl	20°C	1.0M	U			1971LFc (91639)	92

K(NbO+3L)=59.7

 C15H18N4O HL CAS 14337-52-1 (5124)
 5-Diethylamino-2-(2-pyridylazo)phenol;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U	M		1969EMa (92097)	93

K(NbOA+L)=20.63

H2A=tartaric acid

 C16H11N2O5ClS H3L CAS 3567-23-5 (5202)
 5-Chloro-2-hydroxy-3-(2-hydroxy-1-naphthylazo)-benzenesulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	EMF	oth/un	?	?	U	M		1971ENc (92770)	94

K(NbOA+L)=27.5

H2A=tartaric acid

 C16H11N3O10S2 H4L (5174)
 2-Hydroxy-1-(2'-hydroxy-4'-nitro)phenylazo-3,6-disulfonaphthalene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C	?	U			1971RCd (92882)	95

K(?)=5.51

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	30°C	8.00M	U	M		1980GKa (96190)	96

K(NbO(SCN)+L)=2.67
 K(NbO(SCN)L+L)=2.27

 C17H21N5O HL (5223)
 3-Amino-1-hydroxy-6-(2-N-methylanabasiny1-alpha-azo)benzene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U			1967TTa (96389)	97

K(?)=11.36

C31H32N2O13S H6L Xylenol orange CAS 63721-85-5 (432)
5,5'-Bis-N,N-bis(carboxymethyl)aminomethyl-4'-hydroxy-3,3'-dimethylfuchsone-2"-sulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C	?	U			1967ADc (105482)	98

K(?)=4.7

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

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb++++	EMF	alc/w	20°C	100%	U			1971GSa (17896)	99

K(Nb(L')2+L')=12.6

K(2Nb(L')3+3L'=Nb2(L')9)=23.9

Medium: MeOH, 1 M LiCl

C11H9N3O2 H2L PAR CAS 1141-59-9 (636)
4-(2'-Pyridylazo)-1,3-dihydroxybenzene; C5H4N.N:N.C6H3(OH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb++++	sp	oth/un	?	?	U	M		1969EMa (77565)	100

K(NbOA+L)=21.22

H2A=tartaric acid

C22H14N4O16Cl2S4 H8L ClSulfophenol S CAS 2103-73-3 (4156)
2,7-Bis(5'-chloro-2'-hydroxy-3'-sulfo-phenylazo)chromotropic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb++++	sp	KN03	20°C	0.20M	U			1965BSe (101484)	101

B(NbO2+6H+L)=53.0

Metal: Nb(III)

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EXPLANATORY NOTES

DATA Flags are :-

T Data at other TEMPERATURES
I Data with various BACKGROUNDS
H Data for THERMOCHEMICAL quantities
M Data for TERNARY Complexes

END