

## SC-Database

Software version = 5.81 Data version = 4.62

Experiment list contains 61 experiments for  
(no ligands specified)

Metal : Br

(no references specified)

(no experimental details specified)

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e- HL Electron (442)  
Electron;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Br	oth	none	25°C	0.0	U	I		1972C0a	(375)	1
K(0.5Br <sub>2</sub> +e=Br)=18.22(1.078V)										
Method:Estimated data.K=19.79(1.17V,MeOH), 18.70(1.106V,EtOH), 19.79(1.171V, BuOH), 17.46(1.033V,PentOH), 19.79(acetone), 13.57(MeCN), 15.40(HCOOH)										
Br	EMF	mixed	25°C	20%	U	I		1971LZa	(376)	2
K=17.55(1.038V)										
In 20% v/v acetic acid-H <sub>2</sub> O containing 0.1 M MeCOONa. K=1/2Br <sub>2</sub> + e=Br <sup>-</sup> . K=18.22(1.078V,v=0),16.67(0.986V,v=50)										
Br	oth	mixed	25°C	80%	U	I		1971LZa	(377)	3
K=15.01(0.888V)										
In 80% v/v acetic acid-H <sub>2</sub> O containing 0.1 M MeCOONa. K=1/2Br <sub>2</sub> + e=Br <sup>-</sup> . K=14.13(0.836V,v=90)										
Br	gl	oth/un	25°C		U	T H		1971PMe	(378)	4
K=7.92										
Medium:varied. K=HBrO + H <sup>+</sup> + Br <sup>-</sup> =Br <sub>2</sub> + H <sub>2</sub> O. DH=-44.02 kJ mol <sup>-1</sup> ,DS=3.8(25 C); K=8.48, DH=-62.01, DS=-57.3(10 C). Method:also emf with redox electrode										
Br	gl	oth/un	35°C		U	T H		1971PMe	(379)	5
K=7.66										
Medium:varied. K=HBrO + H <sup>+</sup> + Br <sup>-</sup> =Br <sub>2</sub> + H <sub>2</sub> O. DH=-35.82 kJ mol <sup>-1</sup> ,DS=29.7(35 C) K=7.49, DH=-16.7, DS=91.2(50 C). Method:also emf with redox electrode										
Br	oth	none	25°C	0.00	U			1970JSa	(380)	6
K=59.61(1.763V)										
K=BrO <sub>4</sub> <sup>-</sup> + 2H <sup>+</sup> + 2e=BrO <sub>3</sub> <sup>-</sup> + H <sub>2</sub> O. Method:combination of thermodynamic data										
Br	sp	NaClO <sub>4</sub>	25°C	0.03M	U			1970PIa	(381)	7
K=8.02										
Medium:HClO <sub>4</sub> . K=HBrO + H <sup>+</sup> + Br <sup>-</sup> =Br <sub>2</sub> + H <sub>2</sub> O										
Br	oth	none	25°C	0.0	U			1969BBf	(382)	8
K(BrO <sub>4</sub> +2H+2e=BrO <sub>3</sub> +H <sub>2</sub> O)=61.5										
Method:Estimated data										

Br	kin	oth/un	25°C	U					1969PWa	(383)	9
								K=8.06			
								medium:varied. K=HBrO + H+ + Br-=Br2 + H2O			
Br	EMF	none	0°C	0.0	M	T			1966MFa	(384)	10
								K=20.257, 1097.8 mV			
								K=19.479(10 C), 18.741(20 C), 18.033(30 C, 1084.6 mV), 17.354(40 C;1078.2mV)			
								16.700(50 C). K: 0.5Br2 + e = Br-			
Br	oth	none	25°C	0.0	U				1952LAb	(385)	11
								K=62.4(610 mV)			
								K: Br(VII)O3+3H2O+6e=3Br+6OH. From thermodynamic data. K(Br(III)O+H2O+2e=Br+2OH)=25.7(760 mV)			
Br	EMF	oth/un	25°C	6.0M	U	I			1927FFa	(386)	12
								K(BrCl+2e=Br- + Cl-)=39.04			
								Medium: 6 M H+. K=41.28(I=4.0). K(Br2 + Cl2 = 2BrCl)=3.49. K3(Br2 + 2Cl- = Cl2 + 2Br-)= -11.52(I=6M); -11.25(I=4M)			
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Br-				HL	Bromide			CAS 10035-10-6	(19)		
Bromide;											
Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo	
Br	sp	oth/un	25°C	1.00M	U				1994WKa	(1757)	13
								K(BrCl+Br)=4.26			
								K(Br2+Br)=1.21			
								Medium: HCl			
Br	sp	alc/w	20°C	100%	U	M			1979GAa	(1758)	14
								K(HgBr2+HgI2=2HgBrI)=1.04			
								K(HgBr2+HgCl2=2HgBrCl)=0.70			
								Medium: MeOH			
Br	EMF	non-aq	127°C	100%	U				1971BTa	(1759)	15
								K(Br2+L)=3.7			
								Medium: dimethylsulfone			
Br	sp	mixed	25°C	20%	U				1971LZa	(1760)	16
								K(Br2+L)=1.31			
								Medium: 20% v/v ethanoic acid/H2O, 1 M CH3COONa			
Br	sp	non-aq	30°C	100%	U				1970DBa	(1761)	17
								K(Br2+L)=7.33			
								Medium: sulfolane,0 corr			
Br	kin	oth/un	25°C	var	U				1969PWa	(1762)	18
								K(Br2+L)=1.24			

Br	cal	NaClO4	25°C	3.0M	U	H	1967MLa	(1763)	19
Medium:LiClO4. DH=-7.1 kJ mol-1, DS=-2.9 J K-1 mol-1									
Br	sp	alc/w	25°C	100%	U		1966LMa	(1764)	20
							K(Br2+L)=2.26		
Medium:MeOH									
Br	EMF	oth/un	50°C	0.0	U	T	1966MFa	(1765)	21
							K(Br2+L)=1.11		
K1=1.39(0 C),1.34(10 C),1.28(20 C),1.22(30 C),1.17(40 C)									
Br	cal	NaClO4	25°C	3.0M	U	H	1966MLb	(1766)	22
							K(Br2+L)=1.05		
Medium:LiClO4. DH=-6.9 kJ mol-1, DS=0									
Br	dis	NaClO4	25°C	3.0M	U		1965MLb	(1767)	23
							K1=1.03		
							B(2Br2+L)=1.58		
							Kd(Br2=Br2(in CCl4))=1.52		
Br	EMF	NaClO4	25°C	3.0M	U		1964BLc	(1768)	24
							B(Br(Br2)2)=1.40-1.44		
							B(Br2(Br2)2)=2.58		
Br	sp	oth/un	20°C	var	U	H	1964ETa	(1769)	25
							K(IBr+L)=2.68		
							K(I2+L)=1.02		
DH(IBr+L)=-45.1 kJ mol-1, DH(I2+L)=-5.9									
Br	sp	alc/w	25°C	100%	U	T H	1963DHb	(1770)	26
							K(Br2+Br=Br3)=2.55		
Medium:MeOH. K(Br2+Br=Br3)=2.55(-15C), 2.42(5C), 2.31(18 C). DH=-24.2 kJ mol-1. Also K for MeOH/H2O mixtures.									
Br	dis	none	21°C	0.0	U		1961APa	(1771)	27
							Kd(IBr=IBr(in CCl4))=0.63		
							K(IBr+Br)=2.64		
Br	dis	none	21°C	0.0	U		1961APa	(1772)	28
							K1=2.51		
							Kd(AtBr=AtBr(CCl4))=-1.4		
Br	sp	oth/un	25°C	dil	U	T H	1960DAc	(1773)	29
							K(Br2+Br=Br3)=1.37		
K=1.44(18.1 C), 1.24(39.4 C). DH(K)=-16 kJ mol-1									
Br	con	oth/un	rt	var	U		1959PBa	(1774)	30
							B(IBr+3Br=IBr4)=3.70		
Medium: HBr.									
Br	kin	oth/un	24°C	var	U	T	1959PUa	(1775)	31
							K(BrCN+Br)=1.0		

K=0.5(29 C)

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Br	sp	none	25°C	0.0	U	1958BAb (1776)	32
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.24

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Br	dis	NaCl04	25°C	0.50M	U T H	1958STa (1777)	33
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.22
							K(Br <sub>3</sub> +Br <sub>2</sub> =Br <sub>5</sub> )=0.18
K(Br <sub>2</sub> +Br)=1.30(5 C), 1.18(35 C); K(Br <sub>3</sub> +Br <sub>2</sub> )=0.29(5 C), 0.11(35 C).							
DH(Br <sub>2</sub> +Br)=-7.1 kJ mol <sup>-1</sup> , DS=0							

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Br	sp	mixed	25°C	100%	U IH	1957NAb (1778)	34
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.72
CH <sub>3</sub> CO <sub>2</sub> H/H <sub>2</sub> O, 0.1 M Na(CH <sub>3</sub> CO <sub>2</sub> ). K(Br <sub>2</sub> +Br)=1.44(50%). In 75% K=2.0(2 C),							
DH(K)=-14 kJ mol <sup>-1</sup>							

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Br	sol	oth/un	25°C	var	U	1947K0a (1779)	35
							K(2Br <sub>2</sub> +Br=Br <sub>5</sub> )=1.30

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Br	dis	oth/un	25°C	var	U	1934FAa (1780)	36
							Kd(IBr=IBr(in CCl <sub>4</sub> ))=0.59
							K(IBr+Br)=2.57

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Br	sol	none	25°C	0.0	U	1934JBa (1781)	37
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.20
							B(2Br <sub>2</sub> +Br=Br <sub>5</sub> )=1.60

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Br	con	oth/un	25°C	0.0	U	1934LIa (1782)	38
							K(2Br <sub>2</sub> +Br=Br <sub>5</sub> )=0.92?

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Br	con	none	25°C	0.0	U T	1934LIa (1783)	39
							B(2Br <sub>2</sub> +Br=Br <sub>5</sub> )=1.30.
K(2Br <sub>2</sub> +Br=Br <sub>5</sub> )=1.60(0 C)							

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Br	dis	none	22°C	0.0	U T	1932GMb (1784)	40
							Kd(Br <sub>2</sub> =Br <sub>2</sub> (in CCl <sub>4</sub> ))=1.44
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.25
I=0 corr. At 16.5C: Kd=1.42, K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.27.							

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Br	sp	oth/un	16°C	var	U	1928J0a (1785)	41
							K(Br <sub>2</sub> +Br)=1.46

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Br	sol	oth/un	27°C	var	U	1918LIa (1786)	42
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.20
							K(Br <sub>3</sub> +Br <sub>2</sub> =Br <sub>5</sub> )=0.08
							K(2Br <sub>2</sub> +Br=Br <sub>5</sub> )=1.28
Medium: KBr. At 32.6C: K(Br <sub>3</sub> +Br <sub>2</sub> )=0.03, K(Br <sub>2</sub> +Br)=1.19, K(2Br <sub>2</sub> +Br)=1.22							

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Br	sol	oth/un	0°C	var	U	1918LIa (1787)	43
							K(Br <sub>2</sub> +Br=Br <sub>3</sub> )=1.29

$$K(2\text{Br}_2 + \text{Br} = \text{Br}_5) = 1.61$$

Br	dis oth/un 25°C	var U	1896JAa	(1788)	44
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Cyanide;

Br kin oth/un 24°C var U T 1959PUa (2616) 45

$K=4.89(20\text{ }^{\circ}\text{C}), 4.52(29\text{ }^{\circ}\text{C}), 4.04(41.5^{\circ}\text{C}), 3.59(56\text{ }^{\circ}\text{C}), 3.08(70\text{ }^{\circ}\text{C})$

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Chloride;

Br	sp	oth/un	25°C	1.0M	C	T	H	1999BMb	(4565)	46
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$$K(2\text{BrCl}=\text{Br}_2+\text{Cl}_2)=-2.12$$
$$K(\text{BrCl(g)}=\text{BrCl(aq)})=-0.027$$

Cation is Br<sup>+</sup>. Medium: 1.0 M HCl. Data for 6-26 C. DH=45.1 kJ mol<sup>-1</sup>, DS=111 J K<sup>-1</sup> mol<sup>-1</sup>. DH(BrCl(g)=BrCl(aq))=-46.8 kJ mol<sup>-1</sup>, DS=-157 J K<sup>-1</sup> mol<sup>-1</sup>

Br	sp	oth/un	22°C	0.60M	U	I	1974MKg	(4566)	47
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$$K(\text{Br}_2 + \text{Cl}) = 0.00$$

Medium: 0.6-0.85 M KCl.  $K = -0.08(\text{RbCl}), -0.16(\text{CsCl})$

Br dis oth/un 25°C 0.60M U TI 1973MKb (4567) 48

$$K(\text{Br}_2 + \text{Cl}) = 0.1$$

Medium: 0.6-0.7 M KCl. At 25 C:  $K = -0.03$  (in RbCl),  $K = -0.11$  (CsCl)

At 0 °C:  $K=0.2$  (KCl),  $K=0.05$  (RbCl),  $K=-0.03$  (CsCl)

Br	sp	oth/un	25°C	var	U	K1=0.06	1966BPe	(4568)	49
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$$K(\text{Br}_2 + 2\text{Cl}^- = \text{BrCl}_2^- + \text{Br}^-) = -2.14$$

Br	sp	oth/un	25°C	var	U T H	1960DAc	(4569)	50
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$$K(\text{Br}_2 + \text{L}) = 0.17$$

$K=0.20(18.1\text{ }^{\circ}\text{C})$ ,  $0.11(39.4\text{ }^{\circ}\text{C})$ .  $\Delta H(K)=-7.1\text{ kJ mol}^{-1}$

Br	EMF oth/un	rt	var	U	1959PBa	(4570)	51
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$$K(\text{BrL} + 5\text{L} = \text{BrL}_6) = 2.42$$

Br kin oth/un 24°C var U T 1959PUa (4571) 52

$$K(\text{BrCN}+\text{L})=1.5$$
$$K=1.4(29\text{ }^{\circ}\text{C})$$

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Br          sp  none  25°C  0.0  U          1958BAb (4572)  53
                                     K(Br2+L)=0.14
-----
Br          sol oth/un 25°C  var  U          1947K0a (4573)  54
                                     K(Br2+L)=0.08
-----
Br          sp  oth/un 16°C  var  U          1928J0a (4574)  55
                                     K(Br2+L)=0.72
-----
Br          dis oth/un 30°C  var  U          1922RSa (4575)  56
                                     K(Br2+L)=0.15
-----
Br          dis oth/un 25°C  var  U          1896JAa (4576)  57
                                     K(Br2+L)=0.14
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CrO4--      H2L      Chromate      CAS 7738-94-5 (2382)
Chromate;
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Metal       Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
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Br          kin NaCl04 26°C  2.00M U T          1971RKa (6476)  58
                                     K'=1.14
38 C: K'=1.08. K': Br+2H+HCrO4=HCrO3+H2O. DH=-8.8 kJ mol-1
*****
I-          HL      Iodide      CAS 10034-85-2 (20)
Iodide;
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Metal       Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
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Br          kin oth/un 24°C  var  U T          1959PUa (7905)  59
                                     K(BrCN+L)=1.78
K=1.85(20 C), 1.65(29 C), 1.40(41.5 C), 1.15(56 C), 0.88(70 C)
*****
SCN-        HL      Thiocyanate  CAS 463-56-9 (106)
Thiocyanate;
-----
Metal       Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Br          kin oth/un 24°C  var  U T          1959PUa (14838)  60
                                     K(BrCN+L)=1.7
At 29 C K=1.5
*****
SO2         L      Sulfur dioxide (6336)
Sulfur dioxide;
-----
Metal       Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
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Br          sp  non-aq 25°C  100% U T H      K1=2.00      1971WNb (15352)  61
Medium: MeCN. DH(K1)=-12.9 kJ mol-1, DS(K1)=-5.0 J K-1 mol-1

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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

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END