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MUTUAL DIFFUSION COEFFICIENTS IN AQUEOUS
ELECTROLYTE SOLUTIONS

(Technical Report)

Prepared for publication by

VICTOR M. M. LOBO

Department of Chemistry, University of Coimbra, P-3000 Coimbra, Portugal

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Mutual diffusion coefficients in aqueous electrolyte solutions (Technical Report)

Abstract – Published mutual diffusion coefficient data for aqueous electrolyte solutions are presented. Coefficients of a selected function useful for calculation of diffusion coefficient values at specified concentrations are given.

INTRODUCTION

Concentration differences within a solution, free from convection currents, produce a spontaneous flow of matter which tends to reduce those concentration differences. This phenomenon is called diffusion. In the case of a binary system such as a solution of a single electrolyte (solvent: index 1; electrolyte (solute): index 2) diffusion is described by (one) diffusion coefficient D according to Fick's first law of diffusion (1855):

$${}_w J_i = -D \text{grad } c_i \quad (i=1,2) \quad (1)$$

where

${}_w J_i$ = molar flow of substance i measured relative to a volume-fixed reference frame, i.e. the amount of substance i crossing per unit of time a unit area of a suitable chosen reference plane moving with a velocity equal to the local mean velocity w of the volume element of the solution, velocity which is taken as representative of the convection velocity of the system (In experimental setups to obtain D usually care is taken that $w = 0$ so that the experiment is performed in convection-free conditions).

$\text{grad } c_i$ = gradient of the molarity (molar volume concentration) of substance i .

The diffusion coefficient D corresponds to the solution which means that it is the same for both the electrolyte and the solvent. Certainly the diffusion process involves both substances as it consists in a mutual interdiffusion of solute and solvent. A diffusional flow of the electrolyte always implies a diffusional counterflow of the solvent such that

$$V_2 \cdot {}_w J_2 = -V_1 \cdot {}_w J_1$$

and in the same way for a gradient of concentration of the electrolyte there always exists a

gradient of concentration of the solvent in the opposite direction such that

$$V_2 \cdot \text{grad } c_2 = -V_1 \cdot \text{grad } c_1.$$

There does not exist a diffusion of a single substance, although one usually only visualizes or follows or is interested in the diffusional displacement of the electrolyte (solute).

Data on volume-fixed frame mutual diffusion coefficients of aqueous electrolyte solutions published in the literature are shown in Table 1.

The following polynomial in $c^{1/2}$ was fitted to the data by least squares

$$D/(10^{-9} \text{ m}^2 \text{ s}^{-1}) = a_0 + a_1 [c/(\text{mol dm}^{-3})]^{1/2} + a_2 [c/(\text{mol dm}^{-3})] + a_3 [c/(\text{mol dm}^{-3})]^{3/2} + a_4 [c/(\text{mol dm}^{-3})]^2 \quad (2)$$

where the coefficients a_0 , a_1 , a_2 , a_3 and a_4 are adjustable parameters.

Table 2 shows the coefficients a_0 to a_4 of equation 2. They may be used to calculate values of diffusion coefficients at specified concentrations within the range of the experimental data shown in Table 1 and eventually to compare data from different laboratories. The goodness of the fit can be assessed by the root mean square deviation (r.m.s.d.) calculated with a minimum of 5 experimental data points.

Data in the molality scale were converted to the molarity scale according to

$$c_2 = m_2 \cdot \rho / (1 + m_2 \cdot M_2) \quad (3)$$

where

- c_2 = solute amount (molar volume) concentration (molarity)
- m_2 = molality of the solute
- ρ = density of the solution
- M_2 = molar mass of the solute

and the following units are recommended for using equation 3:

$$c_2/(\text{mol dm}^{-3}) = \frac{m_2 / (\text{mol kg}^{-1}) \cdot \rho / (\text{g cm}^{-3} \text{ or } \text{kg dm}^{-3})}{1 + m_2 / (\text{mol kg}^{-1}) \cdot M_2 / (\text{kg mol}^{-1})} \quad (4)$$

TABLE 1
DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS

c (mol dm⁻³); m (mol kg⁻¹); D (10⁻⁹ m² s⁻¹)

AgNO ₃ 1°C (ref. 3)	c 0.2511 D 0.7677	0.2510 0.7670	0.5015 0.7112	0.7526 0.6644	1.0037 0.6185	1.0036 0.6196	1.2544 0.5814	1.5044 0.5473		
AgNO ₃ 13°C (ref. 3)	c 0.2510 D 1.1121	0.2512 1.1122	0.5016 1.0404	0.7525 0.9733	0.7532 0.9760	1.0035 0.9136	1.0026 0.9202	1.2548 0.8632	1.2532 0.8753	1.5040 0.8258
AgNO ₃ 25°C (ref. 65)	m 0.1009 D 1.584	0.2006 1.537	0.5017 1.425	1.0078 1.275						
AgNO ₃ 25°C (ref. 43)	c 0.0944 D 1.591	0.1577 1.547	0.2543 1.510	0.2681 1.508	0.5100 1.364	1.0266 1.194	1.5384 1.080	2.0403 0.984	3.0028 0.846	4.0485 0.748
AgNO ₃ 25°C (ref. 68)	c 0.0001 D 1.758	0.0005 1.746	0.001 1.738	0.005 1.708	0.05 1.623	0.1 1.586	0.2 1.537	0.5 1.423	0.7 1.357	1.0 1.269
		2.0 0.913	3.0 0.830	3.5 0.764	4.5 0.665	5.0 0.627	6.0 0.564	7.0 0.516	8.0 0.487	9.0 0.484
AgNO ₃ 25°C (ref. 3)	c 0.2510 D 1.5183	0.2512 1.5183	0.5015 1.4260	0.5018 1.4256	1.0038 1.2754	1.0034 1.2742	1.2536 1.2106	1.2542 1.2167	1.5052 1.1543	1.5044 1.1512
AgNO ₃ 37°C (ref. 3)	c 0.2511 D 1.9783	0.2508 1.9782	0.5018 1.8722	0.5018 1.8725	1.0040 1.6989	1.0030 1.6933	1.2544 1.6081	1.5049 1.5497		
BaCl ₂ 25°C (ref. 34)	c 0.0068 D 1.332	0.0097 1.319	0.0109 1.321	0.0139 1.308	0.0229 1.301	0.0287 1.285	0.0403 1.265	0.0452 1.271	0.0542 1.261	
BaCl ₂ 25°C (ref. 90)	c 0.0183 D 1.217	0.0423 1.186	0.0533 1.174	0.1066 1.159	0.2267 1.150	0.3968 1.155	0.9218 1.178	0.9218 1.177	1.3442 1.178	1.4486 1.181
BaCl ₂ 25°C (ref. 67)	c 0.0001 D 1.361	0.0005 1.337	0.001 1.320	0.005 1.267	0.05 1.178	0.1 1.160	0.2 1.150	0.5 1.161	0.7 1.171	1.0 1.179

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c / (mol dm⁻³); m / (mol kg⁻¹); D / (10⁻⁹ m² s⁻¹)

BaCl ₂ 25°C (ref. 79)	c 1.2621	0.0044	0.0070	0.0092	0.0132	0.0185	0.0266	0.0440	0.0719	0.1218	0.1849	0.3024	0.3898
	D	1.2621	1.2460	1.2365	1.2227	1.2088	1.1955	1.1798	1.1681	1.1565	1.1511	1.1507	1.1508
Ba(ClO ₄) ₂ 25°C (ref. 57)	c 1.1570	0.4875	0.5567	0.6343	0.8072	0.9993	1.2082	1.6107					
	D	1.1570	1.1586	1.1604	1.1678	1.1741	1.1808	1.1680					
CaCl ₂ 15°C (ref. 39)	c 1.265	0.005	0.008	0.01	0.02	0.03	0.05	0.08	0.10				
	D	1.265	1.240	1.221	1.148	1.148	1.129	1.062	1.048				
CaCl ₂ 25°C (ref. 39)	c 1.204	0.0025	0.0100	0.0400	0.0900	0.2500	0.4900	0.4900					
	D	1.204	1.162	1.135	1.128	1.138	1.162	1.162					
CaCl ₂ 25°C (ref. 81)	c 1.129	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
	D	1.129	1.120	1.117	1.119	1.124	1.132	1.148	1.167	1.189	1.215	1.243	
CaCl ₂ 25°C (ref. 22)	c 1.155	0.015	0.025	0.070	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5
	D	1.155	1.143	1.113	1.110	1.111	1.118	1.140	1.166	1.203	1.263	1.307	1.306
CaCl ₂ 25°C (ref. 66)	c 1.153	3.0	3.25	3.5									
	D	1.153	1.233	1.195									
CaCl ₂ 25°C (ref. 33)	c 1.251	0.0281	0.0547	0.1020	0.1930	0.3142	0.4694	0.6706	1.000	1.442	1.462	2.046	2.570
	D	1.251	1.136	1.122	1.123	1.132	1.152	1.177	1.220	1.271	1.271	1.310	1.311
CaCl ₂ 25°C (ref. 67)	c 1.310	3.250	4.001	4.486	5.012	5.424	6.004						
	D	1.310	1.078	0.919	0.7163	0.5715	0.4020						
CaCl ₂ 35°C (ref. 39)	c 1.530	0.0017	0.0021	0.0032	0.0043	0.0054	0.0070	0.0120	0.0139	0.0162	0.0281	0.0547	0.1020
	D	1.530	1.236	1.227	1.214	1.209	1.200	1.183	1.175	1.167	1.153	1.136	1.122
Ca(NO ₃) ₂ 25°C (ref. 56)	c 1.164	0.001	0.002	0.003	0.005	0.008	0.01	0.02	0.03	0.08	0.10	0.0547	0.1020
	D	1.164	1.191	1.156	1.144	1.090	1.086	1.032	1.020	0.983	0.973	1.136	1.122

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c / (mol dm⁻³); m / (mol kg⁻¹); D / (10⁻⁹ m² s⁻¹)

CH ₃ COOH 25°C (ref. 40)	$c/10^{-3}$	0.945	2.13	6.72	7.68	16.3	22.3	36.6	42.8	55.5	97.1	
	D	1.291	1.284	1.250	1.251	1.239	1.213	1.221	1.212	1.207	1.200	
CH ₃ COOH 25°C (ref. 50)	$c/10^{-3}$	1.76	3.51	5.30	6.15	9.70	20.20	42.80	97.10			
	D	1.245	1.227	1.226	1.218	1.215	1.221	1.212	1.200			
CH ₃ COOH 35°C (ref. 91)	c	0.1769	0.4200	0.4236	0.6636	0.9816	1.7780					
	D	1.515	1.464	1.464	1.424	1.377	1.270					
HCl 10°C (ref. 41)	c	0.02	0.05	0.10	0.20	0.35						
	D	2.05	2.02	2.03	2.05	2.11						
HCl 15°C (ref. 41)	c	0.02	0.05	0.10	0.20	0.35	0.50	0.75	1.00			
	D	2.35	2.33	2.33	2.35	2.40	2.45	2.56	2.68			
HCl 25°C (ref. 41)	c	0.02	0.05	0.10	0.20	0.35	0.50	0.75	1.00			
	D	2.97	2.93	2.92	2.98	3.06	3.18	3.37	3.58			
HCl 25°C (ref. 42)	c	0.0218	0.0312	0.0542	0.0573	0.1143	0.210	0.273	0.539	0.845	1.090	1.299
	D	3.00	2.98	2.96	2.96	2.93	2.95	2.98	3.16	3.40	3.59	3.79
HCl 25°C (ref. 84)	c	1.713										
	D	4.08										
HCl 25°C (ref. 84)	c	0.05	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	3.0
	D	3.073	3.050	3.064	3.093	3.184	3.286	3.436	3.743	4.046	4.337	4.658
HCl 25°C (ref. 37)	c	0.0063	0.0113	0.0144	0.0154	0.0188	0.0199	0.0216	0.0247	0.0286	0.034	0.05
	D	3.217	3.173	3.160	3.147	3.133	3.149	3.136	3.129	3.122	3.11	3.07
HCl 25°C (ref. 52)	c	0.005	0.008	0.01	0.02	0.03	0.05	0.08	0.1			
	D	3.218	3.177	3.165	3.149	3.116	3.060	3.031	3.017			
HCl 25°C (ref. 45)	c	0.1	0.2	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	
	D	3.050	3.064	3.184	3.436	3.743	4.046	4.337	4.658	4.920	5.17	
HCl 35°C (ref. 41)	c	0.02	0.05	0.10	0.20	0.35						
	D	3.66	3.61	3.60	3.65	3.77						

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c / (mol dm⁻³); m / (mol kg⁻¹); D / (10⁻⁹ m² s⁻¹)

H ₂ SO ₄ 25°C (ref. 46)	$c/10^{-3}$	0.35	0.70	1.00	1.58	3.00	4.57	6.00	8.00	10.8	19.5	28.2	37.0
	D	2.402	2.342	2.310	2.268	2.166	2.112	2.074	2.034	1.978	1.933	1.896	1.874
H ₂ SO ₄ 35°C (ref. 38)	c	40.0	80.0	100.0	101.2	150.0	197.8	200.0					
	D	1.875	1.828	1.818	1.825	1.811	1.811	1.800					
HgCl ₂ 25°C (ref. 17)	c	0.0253	0.0475	0.1521	0.3504	0.7500							
	D	2.330	2.290	2.265	2.280	2.430							
KBr 25°C (ref. 84)	c	0.0304	0.0683	0.100	0.136	0.167							
	D	1.02	1.02	1.01	0.99	1.00							
KCl 0°C (ref. 89)	c	0.05	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	3.0	3.5
	D	1.892	1.874	1.870	1.872	1.885	1.917	1.975	2.062	2.132	2.199	2.280	2.354
KCl 4°C (ref. 23)	c	4.0											
	D	2.434											
KCl 15°C (ref. 65)	c	0.0996	0.1988	0.2946	0.3956	0.4953	0.5905	0.9741	1.4412	1.8951	2.3349	2.7631	
	D	0.924	0.920	0.921	0.924	0.928	0.933	0.960	0.998	1.034	1.074	1.109	
KCl 18°C (ref. 82)	c	0.0166	0.168	0.307	0.379	0.558							
	D	1.080	1.038	1.036	1.037	1.042							
KCl 20°C (ref. 32)	m	1	2	3	4								
	D	1.483	1.572	1.663	1.743								
KCl 20°C (ref. 72)	c	0.05	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0	2.5	3.0	3.5
	D	1.55	1.52	1.50	1.50	1.53	1.55	1.58	1.65	1.74	1.83	1.93	2.03
KCl 18°C (ref. 89)	c	0.0638	0.0995	0.1490	0.2034	0.2969	0.3948	0.5889	0.7800	0.9326	1.1338	1.4326	1.8864
	D	1.569	1.560	1.552	1.550	1.551	1.552	1.564	1.580	1.593	1.612	1.640	1.685
KCl 20°C (ref. 32)	c	2.3242	2.7489	3.1602	3.3481								
	D	1.730	1.778	1.822	1.843								
KCl 20°C (ref. 72)	c	0.0012	0.0024	0.0036	0.0045	0.0112							
	D	1.736	1.7245	1.719	1.709	1.6885							
KCl 20°C (ref. 72)	c	0.067	0.191	0.670	1.340	2.010	2.680	3.350	4.450				
	D	1.650	1.595	1.586	1.655	1.721	1.773	1.810	1.940				

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c (mol dm⁻³); m (mol kg⁻¹); D (10⁻⁹ m² s⁻¹)

KCl 35°C (ref. 89)	c	0.0594	0.0990	0.1979	0.2955	0.3917	0.4897	0.5860	0.6818	0.7772	0.9652	1.4260	1.8754
	D	2.314	2.291	2.273	2.274	2.280	2.284	2.294	2.310	2.320	2.340	2.385	2.430
KCl 35°C (ref. 15)	m	2.3097	2.7208	3.1385	3.5411								
	D	2.484	2.530	2.577	2.625								
KCl 45°C (ref. 65)	1	0.10	0.20	0.50	1.00	2.00	3.00						
	D	2.370	2.320	2.311	2.345	2.458	2.575						
KCl 45°C (ref. 15)	2	2.825	2.929	3.036	3.116								
	D	1	0.10	0.50	1.00	2.00	3.00						
KCl 50°C (ref. 89)	3	0.0983	0.1907	0.1962	0.2448	0.3421	0.3906	0.4864	0.5824	0.9598	1.4186	1.7854	1.8080
	D	3.067	3.030	3.035	3.025	3.020	3.025	3.020	3.027	3.065	3.135	3.180	3.185
KClO ₄ 25°C (ref. 53)	4	1.8633	2.2952	2.7134	3.1205	3.5206	3.5978	3.7828					
	D	3.194	3.250	3.315	3.355	3.390	3.393	3.395					
K ₂ CrO ₄ 20°C (ref. 12)	c	0.01	0.02	0.03	0.08	0.1							
	D	1.827	1.798	1.763	1.676	1.633							
K ₂ Cr ₂ O ₇ 20°C (ref. 12)	c	0.386	0.772	1.030	1.287	1.544	2.059	2.190	2.579				
	D	1.870	1.564	1.230	1.054	0.952	1.135	1.180	1.283				
KF 25°C (ref. 74)	c	0.169	0.254	0.339	0.424	0.509	0.640	0.670					
	D	0.690	0.520	0.285	0.360	0.450	0.670						
K ₂ HPO ₄ 25°C (ref. 48)	c	0.001	0.0020	0.0044	0.0059	0.0073	0.0087	0.0267	0.0401	0.0527	0.0700	0.0796	0.0800
	D	1.641	1.643	1.639	1.634	1.627	1.615	1.602	1.584	1.583	0.966	1.576	0.795
KI 25°C (ref. 9)	c	0.1000	0.1054										
	D	0.959	1.567										
KIO ₃ 25°C (ref. 18)	c	0.0020	0.0041	0.0061	0.0098	0.0201	0.0402	0.0586	0.0784	0.0971			
	D	1.232	1.190	1.183	1.157	1.124	1.085	1.057	1.048	1.040			
	c	0.05	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	3.0	3.5
	D	1.891	1.865	1.859	1.884	1.955	2.001	2.065	2.166	2.254	2.347	2.440	2.533
	c	0.0187	0.0206	0.0227	0.0248	0.0270	0.2						
	D	1.292	1.285	1.281	1.276	1.262	1.044						

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c /(mol dm⁻³); m /(mol kg⁻¹); D /(10⁻⁹ m² s⁻¹)

KNO ₃ 18°C (ref. 82)	c	0.05	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0	2.5	
	D	1.45	1.43	1.39	1.34	1.30	1.27	1.24	1.19	1.15	1.17	
KNO ₃ 25°C (ref. 31)	c	0.0009	0.0012	0.0016	0.0022	0.0025	0.0026	0.0040	0.0045	0.0050	0.0051	0.0060
	D	1.902	1.894	1.887	1.891	1.873	1.878	1.869	1.868	1.877	1.857	1.872
KOH 25°C (ref. 73)	c	0.0072	0.0086	0.0091	0.0092	0.0201	0.0295	0.0430	0.0496	0.0620	0.0745	0.1010
	D	1.856	1.847	1.855	2.739	2.720	2.689	2.677	2.660	2.655	2.663	2.640
LaCl ₃ 25°C (ref. 25)	c	0.0009	0.0011	0.0012	0.0014	0.0019	0.0024	0.0027	0.0030	0.0033	0.0040	0.0066
	D	1.178	1.162	1.163	1.159	1.146	1.135	1.126	1.127	1.120	1.110	1.104
LaCl ₃ 25°C (ref. 67)	c	0.0066	0.026	0.001	0.005	0.01	0.025	0.025	0.025	0.06	0.07	0.08
	D	1.087	1.021	1.175	1.101	1.069	1.023	1.019	1.015	1.012	1.011	1.010
LaCl ₃ 25°C (ref. 21)	c	0.001	0.002	0.005	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08
	D	1.175	1.145	1.105	1.059	1.030	1.019	1.015	1.013	1.012	1.011	1.010
LaCl ₃ 25°C (ref. 93)	c	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	0.9	1.0	2.593
	D	1.017	1.004	1.005	1.011	1.020	1.029	1.039	1.049	1.059	1.068	0.703
LiBr 25°C (ref. 84)	c	0.1053	0.5908	0.7041	0.9072	1.136	1.251	1.440	1.593	1.975	1.985	2.424
	D	1.017	1.029	1.035	1.054	1.077	1.080	1.072	1.034	0.911	0.905	0.703
LiCl 0°C (ref. 87)	c	2.943	3.209	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	3.0
	D	0.518	0.430	1.285	1.296	1.328	1.360	1.404	1.473	1.542	1.597	1.650
	c	0.05	0.1	0.2	0.3	0.5	0.5937	0.7586	0.7888	0.9825	0.9826	1.4581
	D	1.300	1.279	1.285	0.597	0.600	0.604	0.617	0.617	0.622	0.626	0.647
	c	0.1975	0.1982	0.1991	0.3972	0.5063	0.5937	0.7586	0.7888	0.9825	0.9826	1.4581
	D	0.590	0.588	0.588	0.597	0.600	0.604	0.617	0.617	0.622	0.626	0.647
	c	2.3877	2.8399	2.8400	3.2776	3.7131	4.1393	4.5548	4.9632	5.3629	6.1393	6.9290
	D	0.690	0.710	0.708	0.727	0.741	0.754	0.767	0.776	0.774	0.758	0.734

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c / (mol dm⁻³); m / (mol kg⁻¹); D / (10⁻⁹ m² s⁻¹)

LiCl 18°C (ref. 87)	c	0.1673	0.2973	0.5925	0.7872	0.9316	1.3110	1.9243	1.9271	2.3442	2.3741	2.8310	3.2711
	D	1.054	1.049	1.062	1.074	1.081	1.104	1.145	1.145	1.166	1.170	1.1925	1.212
LiCl 25°C (ref. 86)	c	0.1	0.5	1.0	6.1189	6.8638							
	D	1.148	1.136	1.147	1.235	1.185							
LiCl 25°C (ref. 84)	c	0.05	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	3.0	3.5
	D	1.280	1.269	1.267	1.269	1.278	1.288	1.302	1.331	1.363	1.397	1.430	1.464
LiCl 25°C (ref. 29)	c	0.0006	0.0017	0.0022	0.0023	0.0026	0.0030	0.0033	0.0049	0.0056	0.0073	0.0079	0.0083
	D	1.348	1.331	1.335	1.335	1.334	1.331	1.327	1.326	1.319	1.320	1.315	1.313
LiCl 25°C (ref. 87)	c	0.0093	0.0110	2.8333	3.2062	3.8109	4.0908	4.4536	4.5598	4.6338	5.9331	6.3864	8.1108
	D	1.312	1.313	1.417	1.436	1.461	1.469	1.474	1.473	1.474	1.455	1.438	1.240
LiCl 25°C (ref. 67)	c	0.1174	0.1280	0.1675	0.2718	0.3161	0.3346	0.4220	0.5866	0.6598	0.9443	1.1643	1.6658
	D	1.267	1.262	1.261	1.262	1.264	1.264	1.269	1.278	1.280	1.300	1.317	1.346
LiCl 25°C (ref. 67)	c	1.8980	2.0493	2.8333	3.2062	3.8109	4.0908	4.4536	4.5598	4.6338	5.9331	6.3864	8.1108
	D	1.358	1.349	1.344	1.324	1.312	1.280	1.268	1.261	1.272	1.288	1.302	1.337
LiCl 25°C (ref. 6)	c	0.0001	0.0005	0.001	0.005	0.01	0.05	0.1	0.2	0.5	0.7	1.0	1.5
	D	1.369	1.398	1.426	1.324	1.312	1.280	1.268	1.261	1.272	1.288	1.302	1.337
LiCl 35°C (ref. 87)	c	0.5	1.0	1.5	2.0	3.0	4.0	0.6334	0.9610	1.3336	1.6101	2.0614	2.1986
	D	1.272	1.302	1.337	1.369	1.426	1.466	1.618	1.639	1.665	1.685	1.714	1.727
LiCl 50°C (ref. 87)	c	0.1107	0.1480	0.2017	0.2999	0.3945	0.6334	0.8604	0.9610	1.3336	1.6101	2.0614	2.1986
	D	1.605	1.598	1.599	1.603	1.607	1.618	1.635	1.639	1.665	1.685	1.714	1.727
LiCl 50°C (ref. 87)	c	2.6566	3.1857	3.5376	3.7947	4.3175	4.4077	4.9397	5.2370	5.8114	6.5994	7.0118	7.4419
	D	1.760	1.791	1.802	1.809	1.820	1.817	1.822	1.822	1.794	1.741	1.694	2.264
LiCl 50°C (ref. 87)	c	0.1866	0.2457	0.2946	0.3925	0.4212	0.4892	0.4892	0.5866	0.9701	1.2323	1.4418	1.4419
	D	2.190	2.183	2.176	2.174	2.176	2.178	2.180	2.185	2.210	2.242	2.262	2.264
LiCl 50°C (ref. 87)	c	1.9042	2.3581	2.3580	2.8026	3.6627	3.6656	4.4953	4.4960	5.2928	5.2929	5.2928	5.2929
	D	2.306	2.334	2.334	2.362	2.394	2.397	2.406	2.406	2.385	2.385	2.385	2.385

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c /(mol dm⁻³); m /(mol kg⁻¹); D /(10⁻⁹ m² s⁻¹)

NH ₄ Cl 20°C (ref. 72)	c	0.0025	0.005	0.050	0.100	0.150	0.200	0.250	0.300	0.363	3.5 2.203	
	D	1.536	1.521	1.599	1.707	1.834	1.923	1.967	1.969	1.991		
NH ₄ Cl 25°C (ref. 22)	c	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	3.0	3.25
	D	1.838	1.836	1.841	1.861	1.883	1.921	1.986	1.986	2.051	2.113	2.184
NH ₄ NO ₃ 25°C (ref. 94)	c	4.0	4.5	5.0	0.2024	0.4050	2.026	3.000	4.000	5.104	6.004	7.628
	D	2.235	2.257	2.264	1.750	1.731	1.638	1.576	1.522	1.469	1.418	1.338
NH ₄ OH 25°C (ref. 49)	c	0.063	0.077	0.204	0.241	0.447	0.452	0.654	0.783	0.916	0.916	0.916
	D	2.079	2.089	2.102	2.089	2.104	2.120	2.113	2.126	2.119	2.119	2.119
(NH ₄) ₂ SO ₄ 25°C (ref. 94)	c	0.0525	0.1002	0.2050	0.3824	0.5621	1.155	2.393	3.594	3.594	3.594	3.594
	D	0.800	0.825	0.869	0.915	0.950	1.027	1.086	1.126	1.126	1.126	1.126
NaBr 25°C (ref. 84)	c	0.05	0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	2.5	2.5
	D	1.533	1.517	1.507	1.515	1.542	1.569	1.596	1.629	1.668	1.702	1.702
NaC ₂ H ₃ O ₂ 25°C (ref. 58)	c	0.003	0.005	0.008	0.01	0.02	0.03	0.05	0.08	0.1	0.1	0.1
	D	1.147	1.113	1.106	1.102	1.091	1.087	1.073	1.076	1.096	1.096	1.096
Na ₂ CO ₃ 25°C (ref. 51)	c	0.005	0.01	0.05	0.101	0.101	0.202	0.301	0.403	0.506	0.506	0.506
	D	1.15	1.10	1.00	0.947	0.939	0.885	0.834	0.796	0.742	0.742	0.742
NaCl 0°C (ref. 88)	c	0.0768	0.1496	0.1992	0.2492	0.2956	0.3975	0.5943	0.9843	1.4636	1.9337	2.3952
	D	0.725	0.710	0.707	0.699	0.697	0.698	0.699	0.708	0.721	0.734	0.743
NaCl 18°C (ref. 82)	c	0.05	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0	2.5	3.0
	D	1.26	1.24	1.22	1.20	1.21	1.22	1.23	1.26	1.29	1.33	1.36
NaCl 18°C (ref. 88)	c	4.0	4.5	5.0	0.1986	0.3969	0.5908	0.7872	0.7875	0.9810	1.1726	1.4577
	D	1.43	1.46	1.49	1.228	1.226	1.227	1.230	1.230	1.232	1.238	1.245
NaCl 18°C (ref. 88)	c	0.0698	0.0997	0.1986	0.2978	0.3969	0.5908	0.7872	0.7875	0.9810	1.1726	1.4577
	D	1.248	1.241	1.228	1.224	1.226	1.227	1.230	1.230	1.232	1.238	1.245
NaCl 18°C (ref. 88)	c	2.3822	2.8299	3.2664	3.6975	4.1159	4.1164	4.6435	4.9585	4.9585	4.9585	4.9585
	D	1.276	1.291	1.3045	1.318	1.325	1.327	1.330	1.325	1.325	1.325	1.325

Table 1 (contd.) DIFFUSION COEFFICIENTS IN AQUEOUS ELECTROLYTE SOLUTIONS c / (mol dm⁻³); m / (mol kg⁻¹); D / (10⁻⁹ m² s⁻¹)

Zn(ClO ₄) ₂ 25°C (ref. 1)	c	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.5	2.0
	D	1.0357	1.0617	1.0966	1.1342	1.1752	1.2104	1.2476	1.2838	1.3187	1.3521	1.4903	1.5635
ZnSO ₄ 25°C (ref. 92)	c	2.5	3.0	0.125	0.25								
	D	1.5480	1.4198	0.619	0.574								
ZnSO ₄ 25°C (ref. 4)	c	0.003934	0.01575	0.03944	0.07431	0.19632	0.38907	0.59596	0.7604	1.0389	1.3508	1.6333	1.9167
	D	0.7011	0.6533	0.6089	0.5784	0.5111	0.4576	0.4148	0.3959	0.3680	0.3497	0.3398	0.3321
		2.3342	2.3862	2.4923	2.7658	2.7677	3.1550	3.1747					
		0.3161	0.3147	0.3110	0.3006	0.3015	0.2808	0.2813					

TABLE 2
COEFFICIENTS a_0 TO a_4 OF EQUATION

$$D/(10^{-9} \text{ m}^2 \text{ s}^{-1}) = a_0 + a_1 [c/(\text{mol dm}^{-3})]^{1/2} + a_2 [c/(\text{mol dm}^{-3})] + a_3 [c/(\text{mol dm}^{-3})]^{3/2} + a_4 [c/(\text{mol dm}^{-3})]^2$$

Equation valid for interpolation, not for extrapolation.

r.m.s.d. is the root mean square deviation.

Electrolyte	°C	r.m.s.d.	a_0	a_1	a_2	a_3	a_4
AgNO ₃ (ref. 3)	1	0.966E-03	0.830E+00	-0.266E+00	0.646E-01	-0.840E-02	0.000E+00
AgNO ₃ (ref. 3)	13	0.390E-02	0.119E+01	-0.328E+00	0.554E-01	0.000E+00	0.000E+00
AgNO ₃ (ref. 43)	25	0.456E-01	-0.166E+01	-0.583E+00	0.150E+00	-0.185E-01	-0.848E-01
AgNO ₃ (ref. 68)	25	0.357E-01	0.170E+01	-0.550E+00	0.123E+00	-0.143E-01	0.648E-02
AgNO ₃ (ref. 3)	25	0.239E-02	0.162E+01	-0.460E+00	0.141E+00	-0.296E-01	-0.009E-01
AgNO ₃ (ref. 3)	37	0.787E-02	0.164E+01	-0.439E+00	0.763E-01	-0.718E-02	-0.288E+01
BaCl ₂ (ref. 34)	25	0.461E-02	0.134E+01	-0.266E+02	0.200E+04	0.000E+00	0.000E+00
BaCl ₂ (ref. 90)	25	0.103E-01	0.121E+01	-0.500E+00	0.125E+01	-0.109E+01	0.316E+00
BaCl ₂ (ref. 67)	25	0.464E-01	0.132E+01	-0.241E+01	0.916E+01	-0.127E+02	0.582E+01
BaCl ₂ (ref. 79)	25	0.171E-01	0.123E+01	-0.696E+00	0.168E+01	-0.143E+01	0.395E+00
CaCl ₂ (ref. 39)	15	0.725E-02	0.913E+00	-0.161E+01	0.184E+02	-0.703E+02	0.797E+01
CaCl ₂ (ref. 39)	25	0.170E-01	0.120E+01	-0.303E+01	0.359E+02	-0.139E+03	0.152E+01
CaCl ₂ (ref. 81)	25	0.124E+04	-0.418E+02	0.000E+00	0.000E+00	0.000E+00	0.009E+00
CaCl ₂ (ref. 22)	25	0.122E-01	0.113E+01	-0.105E+00	0.267E+00	-0.111E-00	-0.128E-01
CaCl ₂ (ref. 66)	25	0.937E-02	0.113E+01	-0.891E+02	0.135E+00	-0.511E-01	0.426E-01
CaCl ₂ (ref. 33)	25	0.502E-02	0.125E+01	-0.103E+02	0.378E+03	-0.575E+04	0.285E+05
CaCl ₂ (ref. 67)	25	0.103E-01	0.132E+01	-0.790E+02	0.169E+05	-0.123E+07	0.184E+08
CaCl ₂ (ref. 39)	35	0.208E-01	0.152E+01	-0.425E+01	0.497E+02	-0.192E+03	0.220E+03
CdCl ₂ (ref. 18)	25	0.642E-02	0.103E+01	-0.189E+02	0.845E+03	-0.184E+05	0.142E+06
CdCl ₂ (ref. 80)	25	0.447E-01	0.119E+01	-0.320E+01	0.939E+01	-0.117E+02	0.503E+01
Cd(ClO ₄) ₂ (ref. 80)	25	0.271E-01	0.115E+01	-0.135E+01	0.562E+01	-0.728E+01	0.338E+01
CdI ₂ (ref. 17)	25	0.706E-02	0.883E+00	-0.830E+00	0.222E+01	-0.244E+01	0.983E+00
CdI ₂ (ref. 75)	25	0.537E-01	0.120E+01	-0.799E+01	0.433E+02	-0.925E+02	0.678E+01
CdSO ₄ (ref. 18)	25		0.930E+00	-0.157E+02	0.430E+04	-0.380E+04	0.000E+00
CsCl (ref. 28)	25	0.360E-02	0.206E+01	-0.585E+02	0.168E+05	-0.194E+07	0.727E+08
CsCl (ref. 66)	25	0.965E-02	0.187E+01	-0.629E-01	0.102E+00	-0.186E-01	0.917E-03
CsCl (ref. 10)	25	0.389E-01	0.205E+01	-0.835E+00	0.104E+01	-0.435E+00	0.623E+00
Cs ₂ SO ₄ (ref. 26)	25	0.338E-02	0.148E+01	0.469E+02	-0.648E+05	0.205E+08	-0.208E-02
CuSO ₄ (ref. 14)	25	0.136E-01	0.731E+00	-0.478E+01	0.436E+02	-0.162E+03	0.209E+01
CuSO ₄ (ref. 13)	25	0.416E+00	0.809E+01	-0.206E+02	0.436E+02	-0.388E+02	0.116E+01
CuSO ₄ (ref. 96)	25	0.475E-01	0.760E+00	-0.181E+01	0.376E+01	-0.330E+01	0.105E+00
CuSO ₄ (ref. 70)	25	0.168E-01	0.686E+00	-0.140E+01	0.306E+01	-0.300E+01	0.103E+00
HBr (ref. 84)	25	0.660E-01	0.336E+01	-0.358E+01	0.160E+02	-0.223E+02	0.103E+00
CH ₃ COOH (ref. 91)	25	0.511E-01	0.123E+01	-0.210E+00	0.373E-01	-0.343E-02	0.110E-01
CH ₃ COOH (ref. 40)	25	0.727E-02	0.129E+01	-0.762E+01	0.267E+03	-0.397E+04	0.197E+05
CH ₃ COOH (ref. 50)	25	0.382E-02	0.125E+01	-0.902E+01	0.582E+03	-0.125E+05	0.763E+05
CH ₃ COOH (ref. 91)	35	0.462E-03	0.156E+01	-0.312E+00	0.237E+00	-0.149E+00	0.355E+00

Table 2 (contd.) COEFFICIENTS a_0 TO a_4 OF EQUATION

$$D/(10^{-9} \text{ m}^2 \text{ s}^{-1}) = a_0 + a_1 [c/(\text{mol dm}^{-3})]^{1/2} + a_2 [c/(\text{mol dm}^{-3})] + a_3 [c/(\text{mol dm}^{-3})]^{3/2} + a_4 [c/(\text{mol dm}^{-3})]^2$$

Equation valid for interpolation, not for extrapolation.

r.m.s.d. is the root mean square deviation.

Electrolyte	°C	r.m.s.d.	a_0	a_1	a_2	a_3	a_4
HCl (ref. 41)	10	0.179E-01	0.215E+01	-0.606E+02	0.803E+03	-0.373E+01	0.542E+01
HCl (ref. 41)	15	0.442E-01	0.242E+01	-0.149E+01	0.661E+01	-0.885E+01	0.393E+01
HCl (ref. 41)	25	0.590E-01	0.306E+01	-0.226E+01	0.105E+02	-0.141E+02	-0.638E+01
HCl (ref. 42)	25	0.324E-01	0.300E+01	-0.756E+00	0.274E+01	-0.176E+01	0.359E+01
HCl (ref. 84)	25	0.802E-01	0.315E+01	-0.278E+00	0.729E+00	-0.228E+00	0.234E+00
HCl (ref. 37)	25	0.600E-02	0.332E+01	-0.232E+02	0.111E+04	-0.246E+05	0.193E+06
HCl (ref. 45)	25	0.875E-01	0.320E+01	-0.419E+00	0.848E+00	-0.266E+00	0.274E-01
HCl (ref. 41)	35	0.427E-01	0.386E+01	-0.108E+02	0.135E+03	-0.609E+03	0.878E+01
HClO ₄ (ref. 21)	25	0.817E-01	0.280E+01	-0.175E+01	0.561E+00	-0.153E+00	0.136E+00
H ₂ CrO ₄ (ref. 12)	20	0.539E-01	0.144E+01	0.354E+01	-0.152E+00	0.243E-01	-0.114E-01
HNO ₃ (ref. 21)	25	0.990E-01	0.285E+01	-0.224E+01	0.163E+00	-0.292E-01	0.149E+00
H ₃ PO ₄ (ref. 11)	25	0.442E-01	0.981E+00	-0.832E+00	0.353E-01	-0.359E-02	0.100E-01
H ₃ PO ₄ (ref. 47)	25	0.228E-01	0.140E+01	-0.375E+02	0.135E+04	-0.200E+05	0.102E+06
H ₂ SO ₄ (ref. 38)	10	0.000E+00	0.134E+01	-0.304E+01	0.220E+02	-0.555E+02	0.424E+01
H ₂ SO ₄ (ref. 38)	15	0.232E-02	0.151E+01	0.161E+01	0.653E+01	0.100E+02	-0.545E+00
H ₂ SO ₄ (ref. 42)	25	0.810E-01	0.201E+01	-0.259E+01	0.970E+01	-0.124E+02	0.533E+01
H ₂ SO ₄ (ref. 83)	25	0.173E-01	0.180E+01	-0.822E-02	0.197E+00	-0.432E-01	-0.258E+00
H ₂ SO ₄ (ref. 46)	25	0.671E-01	0.229E+01	-0.244E+02	0.413E+03	-0.272E+04	0.601E+02
H ₂ SO ₄ (ref. 38)	35	0.000E+00	0.240E+01	-0.334E+01	0.244E+02	-0.617E+02	0.464E+01
HgCl ₂ (ref. 17)	25	0.116E-03	0.104E+01	-0.148E+01	0.374E+02	-0.369E+03	0.113E+04
KBr (ref. 84)	25	0.378E-01	0.193E+01	-0.249E+00	0.380E+00	-0.131E+00	0.149E-01
KCl (ref. 89)	0	0.169E-02	0.925E+00	-0.413E-01	0.115E+00	-0.449E-01	0.628E-02
KCl (ref. 23)	4	0.000E+00	0.109E+01	-0.655E+00	0.283E+01	-0.523E+01	0.356E+01
KCl (ref. 82)	18	0.428E-01	0.159E+01	-0.325E+00	0.397E+00	-0.124E+00	0.134E-01
KCl (ref. 89)	18	0.469E-02	0.156E+01	-0.723E-01	0.152E+00	-0.544E-01	0.689E-02
KCl (ref. 32)	20	0.000E+00	0.178E+01	-0.648E+02	0.258E+05	-0.438E+07	0.225E+09
KCl (ref. 72)	20	0.132E-01	0.166E+01	-0.303E+00	0.378E+00	-0.135E+00	0.162E-01
KCl (ref. 82)	25	0.223E-01	0.198E+01	-0.719E+00	0.111E+01	-0.667E+00	0.167E+00
KCl (ref. 32)	25	0.912E-02	0.195E+01	-0.270E+01	0.216E+02	-0.630E+02	0.590E+02
KCl (ref. 19)	25	0.476E-02	0.185E+01	-0.409E-01	0.108E+00	-0.306E-01	0.290E-02
KCl (ref. 16)	25	0.000E+00	0.195E+01	-0.132E+01	0.772E+01	-0.201E+02	0.183E+02
KCl (ref. 67)	25	0.369E-01	0.194E+01	-0.515E+00	0.717E+00	-0.313E+00	0.458E-01
KCl (ref. 6)	25	0.000E+00	0.182E+01	0.407E-01	0.363E-01	-0.667E-02	0.267E-03
KCl (ref. 76)	25	0.717E-02	0.202E+01	0.169E+00	-0.114E+00	0.287E-01	-0.295E-02
KCl (ref. 89)	35	0.107E-01	0.230E+01	-0.934E-01	0.187E+00	-0.672E-01	0.828E-02
KCl (ref. 15)	35	0.309E-01	0.246E+01	-0.809E+00	0.119E+01	-0.572E+00	0.902E-01
KCl (ref. 15)	45	0.714E-01	0.296E+01	-0.114E+01	0.177E+01	-0.882E+00	0.141E+00
KCl (ref. 89)	50	0.853E-02	0.306E+01	-0.183E+00	0.247E+00	-0.722E-01	0.688E-02
K ₂ CrO ₄ (ref. 12)	20	0.249E-01	0.160E+01	0.209E+01	-0.449E+01	0.252E+01	-0.438E+01
K ₂ Cr ₂ O ₇ (ref. 12)	20	0.592E-01	0.137E+01	-0.511E+02	0.631E+01	0.000E+00	0.004E+01
KF (ref. 74)	25	0.259E-01	0.196E+01	-0.177E+02	0.587E+03	-0.720E+04	0.295E+05
K ₂ HPO ₄ (ref. 48)	25	0.108E-01	0.123E+01	-0.972E+01	0.238E+03	-0.279E+04	0.119E+05
KI (ref. 9)	25	0.435E-01	0.192E+01	-0.119E+00	0.390E+00	-0.164E+00	0.220E-01
KIO ₃ (ref. 18)	25	0.116E-03	0.273E+01	-0.201E+03	0.965E+04	-0.174E+06	0.653E+06

Table 2 (contd.) COEFFICIENTS a_0 TO a_4 OF EQUATION

$$D/(10^{-9} \text{ m}^2 \text{ s}^{-1}) = a_0 + a_1 [c/(\text{mol dm}^{-3})]^{1/2} + a_2 [c/(\text{mol dm}^{-3})] + a_3 [c/(\text{mol dm}^{-3})]^{3/2} + a_4 [c/(\text{mol dm}^{-3})]^2$$

Equation valid for interpolation, not for extrapolation.

r.m.s.d. is the root mean square deviation.

Electrolyte	°C	r.m.s.d.	a_0	a_1	a_2	a_3	a_4
KNO ₃ (ref. 82)	18	0.172E-01	0.150E+01	-0.633E+00	0.658E+00	-0.345E+00	0.646E-01
KNO ₃ (ref. 31)	25	0.632E-02	0.193E+01	-0.429E+02	0.122E+05	-0.160E+07	0.737E+08
KOH (ref. 73)	25	0.118E-01	0.278E+01	-0.445E+01	0.531E+02	-0.210E+03	0.000E+00
LaCl ₃ (ref. 25)	25	0.309E-02	0.122E+01	-0.603E+02	0.126E+05	-0.118E+07	0.300E+08
LaCl ₃ (ref. 67)	25	0.191E-01	0.127E+01	-0.138E+03	0.332E+05	-0.281E+07	0.678E+08
LaCl ₃ (ref. 21)	25	0.517E-01	0.113E+01	-0.211E+01	0.816E+01	-0.110E+02	0.498E+01
LaCl ₃ (ref. 93)	25	0.134E-01	0.103E+01	-0.192E+00	0.502E+00	-0.321E+00	0.519E+01
LiBr (ref. 84)	25	0.278E-01	0.132E+01	-0.128E+00	0.302E+00	-0.121E+00	0.158E-01
LiCl (ref. 87)	0	0.246E-02	0.580E+00	0.433E-01	0.260E-02	-0.454E-03	-0.526E-01
LiCl (ref. 87)	18	0.423E-02	0.104E+01	0.411E-01	0.979E-02	-0.184E-02	-0.003E-01
LiCl (ref. 84)	25	0.258E-01	0.131E+01	-0.189E+00	0.251E+00	-0.947E-01	0.124E+00
LiCl (ref. 29)	25	0.275E-02	0.135E+01	-0.159E+02	0.357E+04	-0.413E+06	0.171E+08
LiCl (ref. 87)	25	0.384E-02	0.125E+01	0.416E-01	0.128E-01	-0.272E-02	-0.602E-01
LiCl (ref. 67)	25	0.244E-01	0.133E+01	-0.343E+00	0.500E+00	-0.226E+00	0.330E+00
LiCl (ref. 6)	25	0.105E-02	0.125E+01	0.336E-01	0.275E-01	-0.870E-02	0.770E+00
LiCl (ref. 87)	35	0.369E-02	0.159E+01	0.297E-01	0.246E-01	-0.545E-02	-0.236E-01
LiCl (ref. 87)	50	0.683E-02	0.217E+01	-0.889E-02	0.702E-01	-0.193E-01	0.142E-01
LiClO ₃ (ref. 5)	25	0.313E-01	0.123E+01	0.382E-01	0.923E-02	-0.321E-02	0.140E-01
LiNO ₃ (ref. 94)	25	0.298E-01	0.128E+01	-0.481E-01	0.704E-01	-0.208E-01	0.163E-01
LiNO ₃ (ref. 36)	25	0.221E-02	0.130E+01	-0.431E+01	0.114E+03	0.000E+00	0.000E+00
LiOH (ref. 73)	25	0.556E-02	0.166E+01	-0.619E+01	0.109E+03	-0.992E+03	0.313E+04
Li ₂ SO ₄ (ref. 24)	25	0.566E-03	0.102E+01	-0.520E+02	0.192E+05	-0.366E+07	0.253E+09
MgBr ₂ (ref. 71)	25	0.814E-01	0.218E+01	-0.960E+05	0.363E+10	-0.125E+14	0.399E+16
MgCl ₂ (ref. 69)	25	0.228E-01	0.109E+01	-0.133E+00	0.199E+00	-0.771E-01	0.760E+00
MgCl ₂ (ref. 34)	25	0.000E+00	0.121E+01	-0.180E+01	0.000E+00	0.000E+00	0.007E+00
MgSO ₄ (ref. 30)	25	0.429E-02	0.824E+00	-0.828E+02	0.282E+05	-0.467E+07	0.283E+07
MgSO ₄ (ref. 78)	25	0.177E-01	0.656E+00	-0.717E+00	0.704E+00	-0.308E+00	0.460E+00
NH ₄ Cl (ref. 72)	20	0.825E-01	0.162E+01	-0.302E+01	0.588E+02	-0.238E+03	0.298E+02
NH ₄ Cl (ref. 22)	25	0.323E-02	0.183E+01	0.458E-01	0.625E-01	-0.173E-01	-0.133E-01
NH ₄ NO ₃ (ref. 94)	25	0.406E-01	0.183E+01	-0.201E+00	0.661E-01	-0.111E-01	0.621E-01
NH ₄ OH (ref. 49)	25	0.767E-02	0.208E+01	0.992E-01	-0.560E-01	0.000E+00	-0.009E+01
(NH ₄) ₂ SO ₄ (ref. 94)	25	0.559E-02	0.782E+00	0.452E+00	-0.309E+00	0.100E+00	0.112E-01
NaBr (ref. 84)	25	0.308E-01	0.158E+01	-0.399E+00	0.795E+00	-0.458E+00	0.849E+00
Na ₂ CO ₃ (ref. 51)	25	0.165E-01	0.115E+01	-0.342E+01	0.170E+02	-0.392E+02	0.310E+05
NaCl (ref. 88)	0	0.147E-01	0.753E+00	-0.233E+00	0.258E+00	-0.957E-01	0.110E-01
NaCl (ref. 82)	18	0.265E-01	0.128E+01	-0.218E+00	0.192E+00	-0.494E-01	0.421E-01
NaCl (ref. 88)	18	0.224E-01	0.128E+01	-0.149E+00	0.122E+00	-0.308E-01	0.254E-01
NaCl (ref. 84)	25	0.299E-01	0.154E+01	-0.257E+00	0.257E+00	-0.862E-01	0.968E-01
NaCl (ref. 29)	25	0.350E-02	0.159E+01	-0.700E+01	0.249E+01	0.000E+00	0.000E+00
NaCl (ref. 20)	25	0.377E-02	0.161E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Table 2 (contd.) **COEFFICIENTS a_0 TO a_4 OF EQUATION**

$$D/(10^{-9} \text{ m}^2 \text{ s}^{-1}) = a_0 + a_1 [c/(\text{mol dm}^{-3})]^{1/2} + a_2 [c/(\text{mol dm}^{-3})] + a_3 [c/(\text{mol dm}^{-3})]^{3/2} + a_4 [c/(\text{mol dm}^{-3})]^2$$

Equation valid for interpolation, not for extrapolation.

r.m.s.d. is the root mean square deviation.

Electrolyte	°C	r.m.s.d.	a_0	a_1	a_2	a_3	a_4
NaCl (ref. 90)	25	0.112E-01	0.150E+01	-0.974E-01	0.902E-01	-0.216E-01	-0.166E-02
NaCl (ref. 67)	25	0.305E-01	0.157E+01	-0.469E+00	0.605E+00	-0.272E+00	0.400E+00
NaCl (ref. 21)	25	0.224E-01	0.154E+01	-0.176E+00	0.140E+00	-0.332E-01	0.257E-02
NaCl (ref. 6)	25	0.128E-02	0.148E+01	-0.122E-01	0.242E-01	-0.343E-02	-0.003E+00
NaCl (ref. 44)	25	0.189E-02	0.149E+01	-0.551E-01	0.676E-01	-0.216E-01	0.243E-01
NaCl (ref. 77)	25	0.215E-01	0.151E+01	-0.497E-01	0.348E-01	-0.437E-02	-0.003E-01
NaCl (ref. 88)	35	0.339E-01	0.113E+01	-0.238E+00	0.208E+00	-0.547E+00	0.460E-01
NaCl (ref. 88)	50	0.376E-01	0.267E+01	-0.451E+00	0.350E+00	-0.906E-01	0.772E-02
NaClO ₃ (ref. 5)	25	0.323E-01	0.143E+01	-0.173E+00	0.483E-01	-0.626E-02	-0.008E-01
NaClO ₄ (ref. 44)	25	0.669E-02	0.147E+01	-0.290E-01	0.187E-01	-0.310E-02	0.155E-02
NaHCO ₃ (ref. 51)	25	0.379E-02	0.122E+01	-0.251E+01	0.306E+02	-0.145E+03	0.000E+00
NaI (ref. 9)	25	0.285E-01	0.156E+01	-0.138E+00	0.374E+00	-0.163E+00	0.239E-01
NaI (ref. 95)	25	0.400E-01	0.154E+01	0.785E-01	0.245E-01	-0.000E+00	0.002E+00
NaNO ₃ (ref. 35)	25	0.000E+00	0.148E+01	0.517E+02	-0.193E+05	0.258E+07	-0.115E+09
NaNO ₃ (ref. 44)	25	0.245E-02	0.144E+01	-0.102E+00	0.106E-01	-0.195E-02	0.122E-02
NaOH (ref. 73)	25	0.112E-01	0.208E+01	-0.733E+01	0.189E+03	-0.243E+04	0.110E+00
NaSCN (ref. 44)	25	0.113E-01	0.146E+01	0.228E-01	0.170E-01	-0.499E-02	0.301E-01
Na ₂ SO ₄ (ref. 24)	25	0.191E-02	0.116E+01	0.310E+02	-0.305E+05	0.793E+07	-0.688E+09
Na ₂ SO ₄ (ref. 78)	25	0.142E-01	0.110E+01	-0.116E+01	0.157E+01	-0.117E+01	0.320E+00
NiCl ₂ (ref. 85)	25	0.567E-01	0.116E+01	-0.439E+00	0.532E+00	-0.218E+00	0.258E+00
RbCl (ref. 27)	25	0.386E-02	0.201E+01	-0.458E+01	0.000E+00	0.000E+00	0.000E+00
Tl ₂ SO ₄ (ref. 8)	25	0.178E-02	0.154E+01	0.786E+01	-0.487E+02	0.132E+03	0.000E+00
ZnCl ₂ (ref. 2)	25	0.346E-01	0.113E+01	-0.529E+00	0.527E+00	-0.178E+00	0.211E-01
Zn(ClO ₄) ₂ (ref. 1)	25	0.366E-01	0.111E+01	-0.172E+00	0.723E+00	-0.360E+00	0.490E+00
ZnSO ₄ (ref. 4)	25	0.489E-01	0.714E+00	-0.971E+00	0.902E+00	-0.344E+00	0.458E+00

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