

Table A.1. Properties of rotors used for zone centrifugation, with sucrose gradients whose concentration varies linearly from 5% to 20%

Rotor	$\omega^2 \times 10^{-7}$ max.	$r_b$	$r_m$	a x 10 <sup>7</sup>		$\Lambda_{rel.}$	$t_{rel.}$	$C_{max.}$ mg	Sample Volume me	Gradient Volume ml	Volume of bottom cushion
				5°	20°						
SW 65	4.633	8.85	4.63	23.9	37.4	1	1	0.70	0.12	4.6	-
SW 60	3.948	12.03	6.46	25.1	39.1	1.22	1.1	0.60	0.10	3.75	-
SW 56	3.439	11.57	6.00	23.4	36.7	1.12	1.4	0.60	0.10	3.75	-
SW 50	2.742	9.75	5.65	28.7	44.5	0.86	1.4	0.70	0.12	4.8	-
SW 50.1	2.742	10.73	6.63	32.5	51.2	0.95	1.2	0.72	0.12	4.8	-
SW 36	1.421	13.30	6.65	22.5	35.4	0.83	2.9	1.8	0.3	12.0	-
SW 41	1.843	15.18	7.14	20.1	32.0	1.05	3.0	1.8	0.3	-	-
SW 40	1.755	15.82	7.14	21.6	34.2	1.06	3.3	1.8	0.3	12.6	-
SW 27	0.7994	16.10	8.3	23.6	37.1	0.76	5.6	6.0	1.0	36	-
SW 25.1	0.6854	12.85	6.03	20.3	32.3	0.55	8.0	5.0	0.8	29	-
SW 25.2	0.6854	15.30	7.2	20.5	32.4	0.65	8.0	10.0	1.5	57	-
AI 14	1.343	6.19	3.81	32.4	51.1	0.38	2.5	440	25	400	125
TI 14	2.5278	6.19	3.81	32.4	51.1	0.53	1.4	440	25	400	125
AI 15	0.5308	8.31	4.35	23.8	37.4	0.32	8.8	750	50	1,200	265
TI 15	1.343	8.31	4.35	23.8	37.4	0.50	3.6	750	50	1,200	265

-  $r_b$  and  $r_m$  are the respective distances from the gradient bottom and meniscus to the rotor axis. They correspond to the filling volumes of the last two columns.

- a is the proportionality constant between the centrifugation time, and the relative distance through which a given macromolecular zone has sedimented (see equation II-12 bis, in section II.3.b).

-  $\Lambda_{rel.}$  is a measure of the resolving power of the various rotors, relative to the resolving power of rotor SW65. For increasing molecular weights of the macromolecules, the differences among the rotors vanish progressively (section II.6.b).

-  $t_{rel.}$  is the centrifugation time of the various rotors used at their maximum speed, relative to the time in the SW65 rotor.

-  $C_{max.}$  is the maximum macromolecular load of the gradients; for proteins whose molecular weight is smaller than  $3.5 \times 10^5$  daltons, and for the sample layer volumes given in the following column. For RNA's of moderate size these figures should be divided by 1.7. For proteins larger than  $3.5 \times 10^5$  daltons, and for DNA's, the reader is referred to sections II.7.b, and II.7.c, respectively.

Table A.2. Density of the aqueous solutions of a few salts and sucrose as a function of their concentration F. F is the weight fraction, and is given in grams of salt per gram of solution

F	CsCl*				Cs <sub>2</sub> SO <sub>4</sub> **		NaCl*		Sucrose*	
	25°	0°	10°	20°	F	25°	F	25°	F	25°
0.650	1.905	-	-	-	0.0982	1.0850	0	0.99706	-	-
0.630	1.854	-	-	-	0.1434	1.1364	0.01	1.00409	0.0169	1.00340
0.610	1.806	-	-	-	0.2036	1.1964	0.02	1.01112	0.0487	1.01607
0.590	1.762	-	-	-	0.2453	1.2459	0.03	1.01819	0.0788	1.02816
0.570	1.719	-	-	-	0.2759	1.2852	0.04	1.02530	0.1070	1.03971
0.550	1.678	1.695	1.688	1.681	0.3027	1.3204	0.05	1.03245	0.1335	1.05073
0.530	1.638	-	-	-	0.3166	1.3410	0.06	1.03963	0.1584	1.06130
0.510	1.599	-	-	-	0.3341	1.3651	0.07	1.04685	0.1820	1.07150
0.490	1.563	-	-	-	0.3579	1.4000	0.08	1.05412	0.2043	1.08130
0.470	1.528	-	-	-	0.3759	1.4289	0.09	1.06143	0.2254	1.09070
0.450	1.497	1.511	1.506	1.500	0.3849	1.4435	0.10	1.06879	0.2454	1.09976
0.430	1.464	-	-	-	0.4098	1.4848	0.11	1.07619	0.2735	1.11272
0.410	1.434	-	-	-	0.4262	1.5140	0.12	1.08365	0.3080	1.12901
0.400	1.420	1.432	1.428	1.422	0.4408	1.5404	0.13	1.09115	0.3393	1.14412
-	-	-	-	-	0.4529	1.5620	0.14	1.09872	0.3679	1.15824
0.390	1.405	-	-	-	0.4655	1.5862	0.15	1.10634	0.3941	1.17145
0.370	1.378	-	-	-	0.4768	1.6080	0.16	1.11401	0.4351	1.19260
0.350	1.350	-	-	-	0.4876	1.6294	0.17	1.12174	0.4848	1.21907
0.330	1.322	-	-	-	0.4889	1.6321	0.18	1.12954	0.5266	1.24206
0.310	1.298	-	-	-	0.4982	1.6509	0.19	1.13740	0.5621	1.26209
0.290	1.274	-	-	-	0.5064	1.6681	0.20	1.14533	0.5926	1.27970
0.270	1.250	-	-	-	0.5143	1.6854	0.21	1.15333	0.6192	1.29535
0.250	1.228	-	-	-	0.5212	1.6997	0.22	1.16140	0.6425	1.30927
-	-	-	-	-	0.5301	1.7193	0.23	1.16954	0.6631	1.32176
-	-	-	-	-	0.5380	1.7366	0.24	1.17776	-	-
-	-	-	-	-	0.5412	1.7439	0.25	1.18605	-	-
-	-	-	-	-	0.5438	1.7505	0.26	1.19443	-	-
-	-	-	-	-	0.5532	1.7718	-	-	-	-
-	-	-	-	-	0.5591	1.7855	-	-	-	-
-	-	-	-	-	0.5651	1.8002	-	-	-	-

\* International Critical Tables.

\*\* Ludlum and Warner (1965).

Table A.3\*. Sedimentation equilibrium coefficients of a few salts and sucrose, as defined by equations III-2 and III-3

$\rho_{25^\circ}$	$\beta_o \times 10^{-9}$					NaCl****		Sucrose****	
	KBr**	RbBr**	RbCl**	CsCl**	Cs <sub>2</sub> SO <sub>4</sub> ***	$\rho_{25^\circ}$	$\beta_o \times 10^{-9}$	$\rho_{25^\circ}$	$\beta_o \times 10^{-9}$
1.05	-	6.729	9.817	-	-	1.00409	161.0	1.00340	29.89
1.06	-	-	-	-	-	1.01819	56.82	1.01607	10.80
1.075	7.496	-	-	-	-	1.03245	36.54	1.02816	7.121
1.08	-	-	-	-	-	1.04685	28.15	1.03971	5.427
1.10	6.121	3.643	5.532	-	-	1.06143	23.67	1.05073	4.597
1.12	-	-	-	-	-	1.07619	21.13	1.06130	4.103
1.125	5.229	-	-	-	-	1.09115	19.51	1.07150	3.738
1.14	-	-	-	-	-	1.10634	18.50	1.08130	3.478
1.15	4.594	2.536	4.109	2.491	-	1.11272	18.50	1.09070	3.428
1.175	4.151	-	-	-	-	1.12901	17.88	1.09976	3.165
1.20	3.848	2.122	3.445	1.984	1.06	1.14412	17.39	1.11272	3.088
1.225	3.637	-	-	-	-	1.15824	17.38	1.12901	3.059
1.250	3.469	1.772	3.172	1.715	0.853	1.17145	17.39	1.14412	3.042
1.275	3.330	-	-	-	-	1.19260	17.39	1.15824	3.042
1.300	3.213	1.635	3.083	1.546	0.756	1.21907	17.39	1.17145	3.099
1.325	3.112	-	-	-	-	1.24206	17.39	1.19260	3.259
1.35	-	1.528	2.777	1.430	0.704	1.26209	17.39	1.21907	3.571
1.40	-	1.434	2.334	1.346	0.668	1.27970	17.39	1.24206	3.937
1.45	-	1.372	-	1.286	0.644	1.29535	17.39	1.26209	4.330
1.50	-	-	-	1.245	0.641	1.29535	17.39	1.27970	5.010
1.55	-	-	-	1.216	0.647	1.30927	17.39	1.29535	4.987
1.60	-	-	-	1.197	0.659	1.32176	17.39	1.30927	5.753
1.65	-	-	-	1.190	0.672	-	-	1.32176	6.227
1.70	-	-	-	1.190	0.688	-	-	-	-
1.75	-	-	-	1.199	0.707	-	-	-	-
1.80	-	-	-	1.215	0.737	-	-	-	-
1.85	-	-	-	1.236	-	-	-	-	-

\* Figures relative to twenty different salts are published by Ifft et al. (1970).  
 \*\* Ifft, Voet et Vinograd (1961).  
 \*\*\* Ludlum et Warner (1965).  
 \*\*\*\* McEwen (1967.a).

Table A.4.\* Relationship between density and refraction index of the aqueous solutions of a few salts\*\*

Salt	$\rho_{25^\circ} = a \cdot n_D^{25^\circ} - b$ Coefficients of the equation		Density range
	a	b	
Cs <sub>2</sub> SO <sub>4</sub>	12.1200	15.1662	1.15 - 1.40
	13.6986	17.3233	1.40 - 1.70
Cs <sub>2</sub> SeO <sub>4</sub>	12.0919	15.1717	1.38 - 2.00
CsI	8.8757	10.8381	1.20 - 1.55
CsBr	9.9667	12.2876	1.25 - 1.35
CsCl	10.8601	13.4974	1.25 - 1.90
Cs acetate	10.7527	13.4247	1.80 - 2.05
Cs formate	13.7363	17.4286	1.72 - 1.82
Cs formate	12.876***	16.209***	1.84 - 2.34
KBr	6.4786	7.6431	1.10 - 1.35
RbBr	9.1750	11.2410	1.15 - 1.65

\* Table published by Vinograd and Hearst (1962).  
 \*\* Some more recent coefficients are published by Ifft et al. (1970).  
 \*\*\* These coefficients relate the density at 20°C to the refraction index at 25°C.