

52. Reference Tables

	PAGE	
52.001	Table of atomic weights, 1977	1019
52.002	Various strength solutions of the common acids, alkalies, and alcohol	1020
52.003	Percentages by volume 15.56°C (60°F) of ethyl alcohol corresponding to apparent specific gravity at various temperatures	1021
52.004	Alcohol table for calculating percentages of alcohol by volume at 15.56°C (60°F) in mixtures of ethyl alcohol and water from Zeiss immersion refractometer readings and refractive indices at 17.5–25°C	1040
52.005	Percentages by weight corresponding to various percentages by volume at 15.56°C (60°F) in mixtures of ethyl alcohol and water	1046
52.006	Density of carbon dioxide (Parr)	1047
52.007	Correction factors for gasometric determination of carbon dioxide	1048
52.008	Degrees Brix, specific gravity, and degees Baumé of sugar solutions (Plato table) ...	1050
52.009	Specific gravity and degrees Plato of sugar solutions or per cent extract by weight ..	1056
52.010	Temperature corrections for readings of saccharometers (standard at 20°C)	1061
52.011	Jackson-Mathews table of densities of fructose solutions and mean density and expansion coefficients between 20 and 25°C	1062
52.012	Refractive indices (<i>n</i>) of sucrose solutions at 20°C	1063
52.013	Table for determining per cent sucrose in sugar solutions from readings of Zeiss immersion refractometer at 20°C	1070
52.014	Refractive indices of glucose, fructose, and raffinose hydrate solutions at 20°C	1071
52.015	Refractive indices of invert sugar solutions	1072
52.016	Temperature corrections for readings of per cent sucrose in sugar solutions by either Abbé or immersion refractometer at temperatures other than 20°C	1073
52.017	Total reducing sugar required for complete reduction of 10 mL Soxhlet solution to be used in conjunction with Lane-Eynon general volumetric method	1074
52.018	Total reducing sugar required for complete reduction of 25 mL Soxhlet solution to be used in conjunction with Lane-Eynon general volumetric method	1075
52.019	Hammond table for calculating glucose, fructose, and invert sugar and lactose alone and in the presence of sucrose, with values for maltose from the Munson and Walker table	1076
52.020	Density of sucrose solutions at 0–100°C and 0–70%	1085
52.021	Volume factors for thermal expansion of sucrose solutions up to 100°C	1085
52.022	Table for determining total solids in milk from any given specific gravity and percentage of fat (Shaw and Eckles)	1086
52.023	Correction table for specific gravity of milk (Quévenne lactometer)	1088
52.024	Optical crystallographic properties of some crystalline drugs	1089
52.025	Table of refractive indices for drugs, arranged according to ascending value of the lowest index	1098
52.026	Nomograph relating absorbance, concentration, and absorptivity (1 cm cell)	1102

SURPLUS TABLES

	10th ed. Section
Corrections to be subtracted from iodine titer to obtain mg invert sugar by Ofner method .	43.014
Domke table of apparent specific gravity of sucrose solutions at 20°C. (Partially replaced by 52.008, 52.020, and 52.021, 14th ed.)	43.006
Kröber table for determination of pentoses and pentosans	43.021
Meissl and Hiller factors for determining invert sugar in materials in which, of total sugars present, more than 1.5% is invert sugar and less than 98.5% is sucrose	43.105
Munson and Walker table for calculating glucose, invert sugar alone, invert sugar in presence of sucrose (0.4 g and 2 g total sugar), lactose, lactose and sucrose (2 mixtures), and maltose (crystallized) (Maltose values retained in 52.019, 14th ed.)	43.012
Progressive accumulation of radium emanation	43.029
Quisumbing and Thomas table for calculating glucose, fructose, invert sugar, lactose, and maltose (47.024, 11th ed.)	43.020
Wein table for determining maltose	43.016

52.008 Degrees Brix, specific gravity, and degrees Baumé of sugar solutions (Plato Table)^a

°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)	°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)
	20/20°	20/4°			20/20°	20/4°	
0.0	1.00000	0.998234	0.00	9.0	1.03586	1.034029	5.02
.2	.078	9010	.11	.2	668	4850	.13
.4	155	9786	.22	.4	750	5671	.24
.6	233	1.000563	.34	.6	833	6494	.35
.8	311	1342	.45	.8	915	7318	.46
1.0	389	2120	.56	10.0	998	8143	.57
.2	467	2897	.67	.2	4081	8970	.68
.4	545	3675	.79	.4	164	9797	.80
.6	623	4453	.90	.6	247	40626	.91
.8	701	5234	1.01	.8	330	1456	6.02
2.0	779	6015	.12	11.0	413	2288	.13
.2	858	6796	.23	.2	497	3121	.24
.4	936	7580	.34	.4	580	3954	.35
.6	1015	8363	.46	.6	664	4788	.46
.8	093	9148	.57	.8	747	5625	.57
3.0	172	9934	.68	12.0	831	6462	.68
.2	251	10721	.79	.2	915	7300	.79
.4	330	1510	.90	.4	999	8140	.90
.6	409	2298	2.02	.6	5084	8980	7.02
.8	488	3089	.13	.8	168	9822	.13
4.0	567	3881	.24	13.0	252	50665	.24
.2	647	4673	.35	.2	337	1510	.35
.4	726	5467	.46	.4	422	2356	.46
.6	806	6261	.57	.6	506	3202	.57
.8	886	7058	.68	.8	591	4050	.68
5.0	965	7854	.79	14.0	677	4900	.79
.2	2045	8652	.91	.2	762	5751	.90
.4	125	9451	3.02	.4	847	6602	8.01
.6	206	20251	.13	.6	933	7455	.12
.8	286	1053	.24	.8	6018	8310	.23
6.0	366	1855	.35	15.0	104	9165	.34
.2	447	2659	.46	.2	190	60022	.45
.4	527	3463	.57	.4	276	0880	.56
.6	608	4270	.69	.6	362	1738	.67
.8	689	5077	.80	.8	448	2598	.78
7.0	770	5885	.91	16.0	534	3460	.89
.2	851	6694	4.02	.2	621	4324	9.00
.4	932	7504	.13	.4	707	5188	.11
.6	3013	8316	.24	.6	794	6054	.22
.8	095	9128	.35	.8	881	6921	.33
8.0	176	9942	.46	17.0	968	7789	.45
.2	258	30757	.58	.2	7055	8658	.56
.4	340	1573	.69	.4	142	9529	.67
.6	422	2391	.80	.6	229	70400	.78
.8	504	3209	.91	.8	317	1273	.89

(Continued)

^a Natl. Bur. Std. Circ. C440, pp. 614, 626(1942). Based upon figures prepared by Kaiserliche Normal-Eichungs-Kommission and accepted by International Commission for Uniform Methods of Sugar Analysis.

52.008 Degrees Brix, specific gravity, and degrees Baumé of sugar solutions (Plato Table)^a—Continued.

°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)	°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)
	20/20°	20/4°			20/20°	20/4°	
18.0	1.07404	1.072147	10.00	27.0	1.11480	1.112828	14.93
.2	492	3023	.11	.2	573	3763	15.04
.4	580	3900	.22	.4	667	4697	.15
.6	668	4777	.33	.6	761	5635	.26
.8	756	5657	.44	.8	855	6572	.37
19.0	844	6537	.55	28.0	949	7512	.48
.2	932	7419	.66	.2	2043	8453	.59
.4	8021	8302	.77	.4	138	9395	.69
.6	110	9187	.88	.6	232	20339	.80
.8	198	80072	.99	.8	327	1284	.91
20.0	287	0959	11.10	29.0	422	2231	16.02
.2	376	1848	.21	.2	517	3179	.13
.4	465	2737	.32	.4	612	4128	.24
.6	554	3628	.43	.6	707	5079	.35
.8	644	4520	.54	.8	802	6030	.46
21.0	733	5414	.65	30.0	898	6984	.57
.2	823	6309	.76	.2	993	7939	.67
.4	913	7205	.87	.4	3089	8896	.78
.6	9003	8101	.98	.6	185	9853	.89
.8	093	9000	12.09	.8	281	30812	17.00
22.0	183	9900	.20	31.0	378	1773	.11
.2	273	90802	.31	.2	474	2735	.22
.4	364	1704	.42	.4	570	3698	.33
.6	454	2607	.52	.6	667	4663	.43
.8	545	3513	.63	.8	764	5628	.54
23.0	636	4420	.74	32.0	861	6596	.65
.2	727	5328	.85	.2	958	7565	.76
.4	818	6236	.96	.4	4055	8534	.87
.6	909	7147	13.07	.6	152	9506	.98
.8	10000	8058	.18	.8	250	40479	18.08
24.0	092	8971	.29	33.0	347	1453	.19
.2	183	9886	.40	.2	445	2429	.30
.4	275	100802	.51	.4	543	3405	.41
.6	367	1718	.62	.6	641	4384	.52
.8	459	2637	.73	.8	739	5363	.63
25.0	551	3557	.84	34.0	837	6345	.73
.2	643	4478	.95	.2	936	7328	.84
.4	736	5400	14.06	.4	5034	8313	.95
.6	828	6324	.17	.6	133	9298	19.06
.8	921	7248	.28	.8	232	50286	.17
26.0	1014	8175	.39	35.0	331	1275	.28
.2	106	9103	.49	.2	430	2265	.38
.4	200	10033	.60	.4	530	3256	.49
.6	293	0963	.71	.6	629	4249	.60
.8	386	1895	.82	.8	729	5242	.71

(Continued)

52.008 Degrees Brix, specific gravity, and degrees Baumé of sugar solutions (Plato Table)^a—Continued.

°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)	°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)
	20/20°	20/4°			20/20°	20/4°	
36.0	1.15828	1.156238	19.81	45.0	1.20467	1.202540	24.63
.2	928	7235	.92	.2	573	3603	.74
.4	6028	8233	20.03	.4	680	4568	.85
.6	128	9233	.14	.6	787	5733	.95
.8	228	60233	.25	.8	894	6801	25.06
37.0	329	1236	.35	46.0	1001	7870	.17
.2	430	2240	.46	.2	108	8940	.27
.4	530	3245	.57	.4	215	10013	.38
.6	631	4252	.68	.6	323	1086	.48
.8	732	5259	.78	.8	431	2162	.59
38.0	833	6269	.89	47.0	538	3238	.70
.2	934	7281	21.00	.2	646	4317	.80
.4	7036	8293	.11	.4	755	5395	.91
.6	138	9307	.21	.6	863	6476	26.01
.8	239	70322	.32	.8	971	7559	.12
39.0	341	1340	.43	48.0	2080	8643	.23
.2	443	2359	.54	.2	189	9729	.33
.4	545	3379	.64	.4	298	20815	.44
.6	648	4400	.75	.6	406	1904	.54
.8	750	5423	.86	.8	516	2995	.65
40.0	853	6447	.97	49.0	625	4086	.75
.2	956	7473	22.07	.2	735	5180	.86
.4	8058	8501	.18	.4	844	6274	.96
.6	162	9527	.29	.6	954	7371	27.07
.8	265	80560	.39	.8	3064	8469	.18
41.0	368	1592	.50	50.0	174	9567	.28
.2	472	2625	.61	.2	284	30668	.39
.4	575	3660	.72	.4	395	1770	.49
.6	679	4696	.82	.6	506	2874	.60
.8	783	5734	.93	.8	616	3979	.70
42.0	887	6773	23.04	51.0	727	5085	.81
.2	992	7814	.14	.2	838	6194	.91
.4	9096	8856	.25	.4	949	7303	28.02
.6	201	9901	.36	.6	4060	8414	.12
.8	305	90946	.46	.8	172	9527	.23
43.0	410	1993	.57	52.0	284	40641	.33
.2	515	3041	.68	.2	395	1757	.44
.4	620	4090	.78	.4	507	2873	.54
.6	726	5141	.89	.6	619	3992	.65
.8	831	6193	24.00	.8	731	5113	.75
44.0	936	7247	.10	53.0	844	6234	.86
.2	20042	8303	.21	.2	956	7358	.96
.4	148	9360	.32	.4	5069	8482	29.06
.6	254	200420	.42	.6	182	9609	.17
.8	360	1480	.53	.8	295	50737	.27

(Continued)

52.008 Degrees Brix, specific gravity, and degrees Baumé of sugar solutions (Plato Table)^a—Continued.

°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)	°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)
	20/20°	20/4°			20/20°	20/4°	
54.0	1.25408	1.251866	29.38	63.0	1.30657	1.304267	34.02
.2	521	2997	.48	.2	778	5467	.12
.4	635	4129	.59	.4	898	6669	.23
.6	748	5264	.69	.6	1019	7872	.33
.8	862	6400	.80	.8	139	9077	.43
55.0	976	7535	.90	64.0	260	10282	.53
.2	6090	8674	30.00	.2	381	1489	.63
.4	204	9815	.11	.4	502	2699	.74
.6	319	60955	.21	.6	623	3909	.84
.8	433	2099	.32	.8	745	5121	.94
56.0	548	3243	.42	65.0	866	6334	35.04
.2	663	4390	.52	.2	988	7549	.14
.4	778	5537	.63	.4	2110	8766	.24
.6	893	6686	.73	.6	232	9983	.34
.8	7008	7837	.83	.8	354	21203	.45
57.0	123	8989	.94	66.0	476	2425	.55
.2	239	70143	31.04	.2	599	3648	.65
.4	355	1299	.15	.4	722	4872	.75
.6	471	2455	.25	.6	844	6097	.85
.8	587	3614	.35	.8	967	7325	.95
58.0	703	4774	.46	67.0	3090	8554	36.05
.2	819	5936	.56	.2	214	9785	.15
.4	936	7098	.66	.4	337	31017	.25
.6	8052	8262	.76	.6	460	2250	.35
.8	169	9428	.87	.8	584	3485	.45
59.0	286	80595	.97	68.0	708	4722	.55
.2	404	1764	32.07	.2	832	5961	.66
.4	520	2935	.18	.4	957	7200	.76
.6	638	4107	.28	.6	4081	8441	.86
.8	755	5281	.38	.8	205	9684	.96
60.0	873	6456	.49	69.0	330	40928	37.06
.2	991	7633	.59	.2	455	2174	.16
.4	9109	8811	.69	.4	580	3421	.26
.6	227	9991	.79	.6	705	4671	.36
.8	346	91172	.90	.8	830	5922	.46
61.0	464	2354	33.00	70.0	956	7174	.56
.2	583	3539	.10	.2	5081	8427	.66
.4	701	4725	.20	.4	207	9682	.76
.6	820	5911	.31	.6	333	50939	.86
.8	940	7100	.41	.8	459	2197	.96
62.0	30059	8291	33.51	71.0	585	3456	38.06
.2	178	9483	.61	.2	711	4717	.16
.4	298	300677	.72	.4	838	5980	.26
.6	418	1871	.82	.6	964	7245	.35
.8	537	3068	.92	.8	6091	8511	.45

(Continued)

52.008 Degrees Brix, specific gravity, and degrees Baumé of sugar solutions (Plato Table)^a—Continued.

°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)	°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)
	20/20°	20/4°			20/20°	20/4°	
72.0	1.36218	1.359778	38.55	81.0	1.42088	1.418374	42.95
.2	346	61047	.65	.2	222	9711	43.05
.4	473	2317	.75	.4	356	21049	.14
.6	600	3590	.85	.6	490	2390	.24
.8	728	4864	.95	.8	625	3730	.33
73.0	856	6139	39.05	82.0	759	5072	.43
.2	983	7415	.15	.2	894	6416	.53
.4	7111	8693	.25	.4	3029	7761	.62
.6	240	9973	.35	.6	164	9109	.72
.8	368	71254	.44	.8	298	30457	.81
74.0	496	2536	.54	83.0	434	1807	.91
.2	625	3820	.64	.2	569	3158	44.00
.4	754	5105	.74	.4	705	4511	.10
.6	883	6392	.84	.6	841	5866	.19
.8	8012	7680	.94	.8	976	7222	.29
75.0	141	8971	40.03	84.0	4112	8579	.38
.2	270	80262	.13	.2	249	9938	.48
.4	400	1555	.23	.4	385	41299	.57
.6	530	2851	.33	.6	521	2661	.67
.8	660	4148	.43	.8	658	4024	.76
76.0	790	5446	.53	85.0	794	5388	.86
.2	920	6745	.62	.2	931	6754	.95
.4	9050	8045	.72	.4	5068	8121	45.05
.6	180	9347	.82	.6	205	9491	.14
.8	311	90651	.92	.8	343	50860	.24
77.0	442	1956	41.01	86.0	480	2232	.33
.2	573	3263	.11	.2	618	3605	.42
.4	704	4571	.21	.4	755	4980	.52
.6	835	5881	.31	.6	893	6357	.61
.8	966	7192	.40	.8	6031	7735	.71
78.0	.40098	8505	.50	87.0	170	9114	.80
.2	230	9819	.60	.2	308	60495	.89
.4	361	.401134	.70	.4	446	1877	.99
.6	493	2452	.79	.6	585	3260	46.08
.8	625	3771	.89	.8	724	4645	.17
79.0	758	5091	.99	88.0	862	6032	.27
.2	890	6412	42.08	.2	7002	7420	.36
.4	1023	7735	.18	.4	141	8810	.45
.6	155	9061	.28	.6	280	70200	.55
.8	288	10387	.37	.8	420	1592	.64
80.0	421	1715	.47	89.0	559	2986	.73
.2	554	3044	.57	.2	699	4381	.83
.4	688	4374	.66	.4	839	5779	.92
.6	821	5706	.76	.6	979	7176	47.01
.8	955	7039	.85	.8	8119	8575	.11

(Continued)

52.008 Degrees Brix, specific gravity, and degrees Baumé of sugar solutions (Plato Table)^a—Concluded.

°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)	°Brix or % by Wt of Sucrose	Specific Gravity at:		°Baumé (Modulus 145)
	20/20°	20/4°			20/20°	20/4°	
90.0	1.48259	1.479976	47.20	95.0	1.51814	1.515455	49.49
.2	400	81378	.29	.2	958	6893	.58
.4	540	2782	.38	.4	2102	8332	.67
.6	681	4187	.48	.6	246	9771	.76
.8	822	5593	.57	.8	390	21212	.85
91.0	963	7002	.66	96.0	535	2656	.94
.2	9104	8411	.75	.2	680	4100	50.03
.4	246	9823	.84	.4	824	5546	.12
.6	387	91234	.94	.6	969	6993	.21
.8	529	2647	48.03	.8	3114	8441	.30
92.0	671	4063	.12	97.0	260	9891	.39
.2	812	5479	.21	.2	405	31342	.48
.4	954	6897	.30	.4	551	2794	.57
.6	50097	8316	.40	.6	696	4248	.66
.8	239	9736	.49	.8	842	5704	.75
93.0	381	501158	.58	98.0	988	7161	.84
.2	524	2582	.67	.2	4134	8618	.93
.4	667	4006	.76	.4	280	40076	51.02
.6	810	5432	.85	.6	426	1536	.10
.8	952	6859	.94	.8	573	2998	.19
94.0	1096	8289	49.03	99.0	719	4462	.28
.2	239	9720	.12	.2	866	5926	.37
.4	382	11151	.22	.4	5013	7392	.46
.6	526	2585	.31	.6	160	8861	.55
.8	670	4019	.40	.8	307	50329	.64
				100.0	454	1800	.73

52.010 Temperature corrections for readings of saccharometers (standard at 20°C)

(Calcd from data on thermal expansion of sugar solns by Plato^a and assumed that instrument is of Jena 16¹¹¹ glass. Table should be used with caution and only for approx. results when temp. differs much from standard temp. or from temp. of surrounding air.)

Temp., °C	Observed Percentage of Sugar													
	0	5	10	15	20	25	30	35	40	45	50	55	60	70
	Subtract from Per Cent Sugar													
0	0.30	0.49	0.65	0.77	0.89	0.99	1.08	1.16	1.24	1.31	1.37	1.41	1.44	1.49
5	.36	.47	.56	.65	.73	.80	0.86	0.91	0.97	1.01	1.05	1.08	1.10	1.14
10	.32	.38	.43	.48	.52	.57	.60	.64	.67	0.70	0.72	0.74	0.75	0.77
11	.31	.35	.40	.44	.48	.51	.55	.58	.60	.63	.65	.66	.68	.70
12	.29	.32	.36	.40	.43	.46	.50	.52	.54	.56	.58	.59	.60	.62
13	.26	.29	.32	.35	.38	.41	.44	.46	.48	.49	.51	.52	.53	.55
14	.24	.26	.29	.31	.34	.36	.38	.40	.41	.42	.44	.45	.46	.47
15	.20	.22	.24	.26	.28	.30	.32	.33	.34	.36	.36	.37	.38	.39
16	.17	.18	.20	.22	.23	.25	.26	.27	.28	.28	.29	.30	.31	.32
17	.13	.14	.15	.16	.18	.19	.20	.20	.21	.21	.22	.23	.23	.24
18	.09	.10	.10	.11	.12	.13	.13	.14	.14	.14	.15	.15	.15	.16
19	.05	.05	.05	.06	.06	.06	.07	.07	.07	.07	.08	.08	.08	.08
17.5	.11	.12	.12	.14	.15	.16	.16	.17	.17	.18	.18	.19	.19	.20
15.56 (60°F)	.18	.20	.22	.24	.26	.28	.29	.30	.30	.32	.33	.33	.34	.34
	Add to Per Cent Sugar													
21	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09
22	.10	.10	.11	.12	.12	.13	.14	.14	.15	.15	.16	.16	.16	.16
23	.16	.16	.17	.17	.19	.20	.21	.21	.22	.23	.24	.24	.24	.24
24	.21	.22	.23	.24	.26	.27	.28	.29	.30	.31	.32	.32	.32	.32
25	.27	.28	.30	.31	.32	.34	.35	.36	.38	.38	.39	.39	.40	.39
26	.33	.34	.36	.37	.40	.40	.42	.44	.46	.47	.47	.48	.48	.48
27	.40	.41	.42	.44	.46	.48	.50	.52	.54	.54	.55	.56	.56	.56
28	.46	.47	.49	.51	.54	.56	.58	.60	.61	.62	.63	.64	.64	.64
29	.54	.55	.56	.59	.61	.63	.66	.68	.70	.70	.71	.72	.72	.72
30	.61	.62	.63	.66	.68	.71	.73	.76	.78	.78	.79	.80	.80	.81
35	.99	1.01	1.02	1.06	1.10	1.13	1.16	1.18	1.20	1.21	1.22	1.22	1.23	1.22
40	1.42	1.45	1.47	1.51	1.54	1.57	1.60	1.62	1.64	1.65	1.65	1.65	1.66	1.65
45	1.91	1.94	1.96	2.00	2.03	2.05	2.07	2.09	2.10	2.10	2.10	2.10	2.10	2.08
50	2.46	2.48	2.50	2.53	2.56	2.57	2.58	2.59	2.59	2.58	2.58	2.57	2.56	2.52
55	3.05	3.07	3.09	3.12	3.12	3.12	3.12	3.11	3.10	3.08	3.07	3.05	3.03	2.97
60	3.69	3.72	3.73	3.73	3.72	3.70	3.67	3.65	3.62	3.60	3.57	3.54	3.50	3.43
27.5	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.58	0.59	0.60	0.60	0.60

^a Charlottenberg. Physikalisch-technische reichsanstalt. Wiss. Abhandl. Kaiserliche Normal-Eichungs-Kommis-sion, 2, 140(1900).