

Laboratory Manual

FOR QUEENSLAND SUGAR MILLS



SUPPLEMENT TO THE
FIFTH EDITION

DIVISION OF MILL TECHNOLOGY
BUREAU OF SUGAR EXPERIMENT STATIONS
Brisbane, Queensland

SUPPLEMENT
TO THE
FIFTH EDITION
OF THE
LABORATORY MANUAL
FOR
QUEENSLAND
SUGAR MILLS

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Table 1—Temperature Corrections to Readings of Brix Hydrometers (Calibrated at 20°C)

Temperature °C	Observed per cent of sugar																		
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
	Subtract from observed per cent.																		
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	1.47	1.49	1.50	1.50	1.51	1.51
5	0.36	0.47	0.56	0.65	0.73	0.80	0.86	0.91	0.97	1.01	1.05	1.08	1.10	1.12	1.14	1.16	1.17	1.18	1.19
10	0.32	0.38	0.43	0.48	0.52	0.57	0.60	0.64	0.67	0.70	0.72	0.74	0.75	0.76	0.77	0.78	0.79	0.80	0.81
11	0.31	0.35	0.40	0.44	0.48	0.51	0.55	0.58	0.60	0.63	0.65	0.66	0.68	0.69	0.70	0.71	0.72	0.73	0.74
12	0.29	0.32	0.36	0.40	0.43	0.46	0.50	0.52	0.54	0.56	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.64	0.65
13	0.26	0.29	0.32	0.35	0.38	0.41	0.44	0.46	0.48	0.49	0.51	0.52	0.53	0.54	0.55	0.56	0.56	0.57	0.57
14	0.24	0.26	0.29	0.31	0.34	0.36	0.38	0.40	0.41	0.42	0.44	0.45	0.46	0.46	0.47	0.47	0.48	0.48	0.48
15	0.20	0.22	0.24	0.26	0.28	0.30	0.32	0.33	0.34	0.36	0.36	0.37	0.38	0.38	0.39	0.39	0.40	0.40	0.41
16	0.17	0.18	0.20	0.22	0.23	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.31	0.32	0.32	0.33	0.33	0.34
17	0.13	0.14	0.15	0.16	0.18	0.19	0.20	0.20	0.21	0.21	0.22	0.23	0.23	0.24	0.24	0.25	0.25	0.25	0.26
18	0.09	0.10	0.10	0.11	0.12	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.17	0.17
19	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09
20	Add to observed per cent.																		
21	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09
22	0.10	0.10	0.11	0.12	0.12	0.13	0.14	0.14	0.14	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.17
23	0.16	0.16	0.17	0.17	0.19	0.20	0.21	0.21	0.22	0.23	0.24	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25
24	0.21	0.22	0.23	0.24	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.32	0.32	0.32	0.32	0.33	0.33	0.33	0.33
25	0.27	0.28	0.30	0.31	0.32	0.34	0.35	0.36	0.38	0.38	0.39	0.39	0.40	0.40	0.39	0.39	0.39	0.38	0.38
26	0.33	0.34	0.36	0.37	0.40	0.40	0.42	0.44	0.46	0.47	0.47	0.48	0.48	0.48	0.48	0.49	0.49	0.48	0.48
27	0.40	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.54	0.55	0.56	0.56	0.56	0.56	0.57	0.57	0.56	0.56
28	0.46	0.47	0.49	0.51	0.54	0.56	0.58	0.60	0.61	0.62	0.63	0.64	0.64	0.64	0.64	0.65	0.65	0.64	0.64
29	0.54	0.55	0.56	0.59	0.61	0.63	0.66	0.68	0.70	0.70	0.71	0.72	0.72	0.72	0.72	0.73	0.73	0.72	0.72
30	0.61	0.62	0.63	0.66	0.68	0.70	0.73	0.76	0.78	0.78	0.79	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.81
31	0.69	0.70	0.71	0.74	0.76	0.79	0.82	0.84	0.86	0.87	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89
32	0.76	0.78	0.79	0.82	0.85	0.87	0.90	0.93	0.95	0.95	0.96	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
33	0.84	0.85	0.87	0.90	0.93	0.96	0.99	1.01	1.03	1.04	1.05	1.05	1.06	1.06	1.06	1.06	1.06	1.06	1.05
34	0.91	0.93	0.95	0.98	1.02	1.04	1.07	1.10	1.12	1.12	1.13	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.13
35	0.99	1.01	1.02	1.06	1.10	1.13	1.16	1.18	1.20	1.21	1.22	1.22	1.23	1.23	1.22	1.22	1.22	1.22	1.21

Table F—continued

Temperature C°	Observed per cent of sugar																			
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
36	1.07	1.09	1.12	1.15	1.19	1.22	1.25	1.27	1.29	1.30	1.31	1.31	1.32	1.32	1.31	1.31	1.30	1.30	1.29	1.28
37	1.15	1.17	1.21	1.24	1.28	1.31	1.34	1.36	1.38	1.39	1.39	1.39	1.40	1.40	1.39	1.39	1.39	1.38	1.38	1.38
38	1.24	1.26	1.29	1.33	1.36	1.39	1.42	1.44	1.46	1.47	1.48	1.48	1.49	1.49	1.48	1.48	1.47	1.47	1.47	1.46
39	1.33	1.35	1.38	1.42	1.45	1.48	1.51	1.53	1.55	1.56	1.56	1.56	1.57	1.57	1.56	1.56	1.56	1.56	1.55	1.55
40	1.42	1.45	1.47	1.51	1.54	1.57	1.62	1.62	1.64	1.65	1.65	1.65	1.66	1.66	1.65	1.65	1.64	1.64	1.63	1.63
41	1.51	1.54	1.56	1.60	1.63	1.67	1.69	1.71	1.73	1.74	1.74	1.74	1.75	1.75	1.74	1.73	1.72	1.72	1.71	1.71
42	1.61	1.64	1.66	1.70	1.73	1.76	1.79	1.81	1.82	1.83	1.83	1.83	1.84	1.83	1.82	1.82	1.81	1.80	1.79	1.79
43	1.71	1.74	1.76	1.80	1.83	1.86	1.88	1.90	1.92	1.92	1.92	1.92	1.92	1.92	1.91	1.90	1.89	1.89	1.88	1.88
44	1.81	1.84	1.86	1.90	1.93	1.95	1.98	2.00	2.01	2.01	2.01	2.01	2.01	2.00	1.99	1.99	1.98	1.97	1.96	1.96
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	2.09	2.08	2.07	2.06	2.05	2.04	2.04
46	2.01	2.05	2.07	2.11	2.14	2.15	2.17	2.19	2.20	2.20	2.20	2.19	2.19	2.18	2.17	2.16	2.14	2.13	2.12	2.12
47	2.12	2.16	2.18	2.21	2.24	2.26	2.27	2.29	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.23	2.21	2.20	2.20
48	2.23	2.26	2.28	2.32	2.35	2.36	2.38	2.39	2.39	2.39	2.39	2.39	2.38	2.36	2.34	2.33	2.31	2.30	2.28	2.28
49	2.35	2.37	2.39	2.42	2.45	2.47	2.48	2.49	2.49	2.48	2.48	2.48	2.47	2.45	2.43	2.41	2.40	2.38	2.36	2.36
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	2.54	2.52	2.50	2.48	2.46	2.44	2.44
51	2.58	2.60	2.62	2.64	2.67	2.68	2.69	2.69	2.69	2.68	2.68	2.67	2.65	2.63	2.61	2.59	2.57	2.54	2.52	2.52
52	2.70	2.72	2.74	2.76	2.78	2.79	2.80	2.80	2.79	2.78	2.78	2.76	2.75	2.72	2.70	2.68	2.65	2.63	2.62	2.62
53	2.81	2.83	2.85	2.87	2.90	2.90	2.90	2.90	2.88	2.87	2.86	2.84	2.82	2.79	2.76	2.74	2.71	2.69	2.68	2.68
54	2.93	2.95	2.97	2.99	3.01	3.01	3.01	3.01	3.00	2.98	2.97	2.95	2.94	2.91	2.88	2.85	2.82	2.80	2.79	2.79
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	3.00	2.97	2.94	2.91	2.88	2.85	2.85
56	3.18	3.20	3.22	3.23	3.24	3.24	3.23	3.22	3.20	3.18	3.17	3.15	3.12	3.09	3.06	3.03	3.00	2.97	2.93	2.93
57	3.31	3.33	3.35	3.35	3.36	3.35	3.34	3.33	3.31	3.29	3.27	3.25	3.22	3.19	3.15	3.12	3.09	3.05	3.02	3.02
58	3.43	3.46	3.47	3.48	3.48	3.47	3.45	3.43	3.41	3.39	3.37	3.34	3.31	3.28	3.23	3.21	3.17	3.14	3.10	3.10
59	3.56	3.59	3.60	3.60	3.60	3.58	3.56	3.54	3.52	3.50	3.47	3.44	3.41	3.38	3.34	3.30	3.26	3.22	3.19	3.19
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	3.47	3.43	3.39	3.35	3.31	3.27	3.27

This table is calculated using data on thermal expansion of sugar solutions by Plato assuming the instrument to be of Jena 16¹¹ glass. The table should be used with caution and only for approximate results when the temperature differs much from the standard temperature or from the temperature of the surrounding air.

Table II.—Schmitz's Table for Use in the Dry Lead Method with Undiluted Solutions
Normal Weight of 26 000 g

Polysaccharide reading	Degrees Brix																			Polysaccharide reading	
	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100		
	0.26	0.32	0.38	0.44	0.50	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34		1.40
1	0.26	0.32	0.38	0.44	0.50	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	110
2	0.32	0.38	0.44	0.50	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	120
3	0.38	0.44	0.50	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	130
4	0.44	0.50	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	140
5	0.50	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	150
6	0.56	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	160
7	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	170
8	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	180
9	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	190
10	0.80	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	200
11	0.86	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	210
12	0.92	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	220
13	0.98	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	230
14	1.04	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	240
15	1.10	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	250
16	1.16	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	260
17	1.22	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	270
18	1.28	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	280
19	1.34	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	290
20	1.40	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	300
21	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	310
22	1.52	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	320
23	1.58	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	330
24	1.64	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	340
25	1.70	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	350
26	1.76	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	360
27	1.82	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	370
28	1.88	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	380
29	1.94	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	390
30	2.00	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	400
31	2.06	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	410
32	2.12	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	420
33	2.18	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	430
34	2.24	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	440
35	2.30	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	3.44	450
36	2.36	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	3.44	3.50	460
37	2.42	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	3.44	3.50	3.56	470
38	2.48	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	3.44	3.50	3.56	3.62	480
39	2.54	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	3.44	3.50	3.56	3.62	3.68	490
40	2.60	2.66	2.72	2.78	2.84	2.90	2.96	3.02	3.08	3.14	3.20	3.26	3.32	3.38	3.44	3.50	3.56	3.62	3.68	3.74	500

Tenths of the polysaccharide reading	Percent sucrose	Brix 1.0 to 10.0	
		Tenths of the polysaccharide reading	Percent sucrose
0.1	0.43	0.6	0.15
0.2	0.65	0.7	0.18
0.3	0.68	0.8	0.20
0.4	0.74	0.9	0.23
0.5	0.81		

Table II—continued

Polarization reading	Degree Br. X													Polarization reading				
	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5		18.0	18.5	19.0	19.5
41	10.20	10.18	10.16	10.14	10.12	10.10	10.09	10.07	10.05	10.03	10.01	9.99	9.97	9.95	9.93	9.91	9.89	41
42	10.47	10.42	10.40	10.38	10.36	10.34	10.33	10.32	10.30	10.28	10.26	10.24	10.22	10.20	10.17	10.15	10.13	42
43	10.71	10.65	10.63	10.61	10.59	10.57	10.55	10.54	10.52	10.50	10.48	10.46	10.44	10.42	10.40	10.37	10.35	43
44	10.94	10.87	10.85	10.83	10.81	10.79	10.78	10.77	10.75	10.73	10.71	10.70	10.68	10.66	10.64	10.62	10.60	44
45	11.17	11.12	11.10	11.08	11.06	11.04	11.03	11.01	10.99	10.97	10.95	10.93	10.92	10.90	10.88	10.86	10.84	45
46	11.39	11.35	11.33	11.31	11.29	11.27	11.26	11.25	11.23	11.21	11.19	11.17	11.15	11.14	11.12	11.10	11.08	46
47	11.61	11.57	11.55	11.53	11.50	11.48	11.46	11.45	11.43	11.41	11.39	11.37	11.35	11.34	11.32	11.30	11.28	47
48	11.84	11.80	11.78	11.76	11.74	11.72	11.70	11.69	11.67	11.65	11.63	11.61	11.59	11.57	11.55	11.53	11.51	48
49	12.06	12.02	12.00	11.98	11.96	11.94	11.93	11.91	11.89	11.87	11.85	11.83	11.81	11.79	11.77	11.75	11.73	49
50	12.28	12.24	12.22	12.20	12.18	12.16	12.15	12.14	12.12	12.10	12.08	12.06	12.05	12.03	12.01	11.99	11.97	50
51	12.50	12.46	12.44	12.42	12.40	12.38	12.36	12.35	12.33	12.31	12.29	12.27	12.25	12.24	12.22	12.20	12.18	51
52	12.72	12.68	12.66	12.64	12.62	12.60	12.58	12.57	12.55	12.53	12.51	12.49	12.47	12.46	12.44	12.42	12.40	52
53	12.94	12.90	12.88	12.86	12.84	12.82	12.80	12.79	12.77	12.75	12.73	12.71	12.69	12.68	12.66	12.64	12.62	53
54	13.16	13.12	13.10	13.08	13.06	13.04	13.03	13.02	13.00	12.98	12.96	12.94	12.92	12.91	12.89	12.87	12.85	54
55	13.38	13.34	13.32	13.30	13.28	13.26	13.25	13.24	13.22	13.20	13.18	13.16	13.15	13.13	13.11	13.09	13.07	55
56	13.60	13.56	13.54	13.52	13.50	13.48	13.46	13.45	13.43	13.41	13.39	13.37	13.35	13.34	13.32	13.30	13.27	56
57	13.82	13.78	13.76	13.74	13.72	13.70	13.68	13.67	13.65	13.63	13.61	13.59	13.57	13.56	13.54	13.51	13.49	57
58	14.04	14.00	13.98	13.96	13.94	13.92	13.90	13.89	13.87	13.85	13.83	13.81	13.79	13.78	13.76	13.74	13.71	58
59	14.26	14.22	14.20	14.18	14.16	14.14	14.13	14.11	14.09	14.07	14.05	14.03	14.01	13.99	13.97	13.95	13.93	59
60	14.48	14.44	14.42	14.40	14.38	14.36	14.35	14.33	14.31	14.29	14.27	14.25	14.23	14.21	14.19	14.17	14.15	60
61	14.70	14.66	14.64	14.62	14.60	14.58	14.56	14.55	14.53	14.51	14.49	14.47	14.45	14.43	14.41	14.39	14.37	61
62	14.92	14.88	14.86	14.84	14.82	14.80	14.78	14.77	14.75	14.73	14.71	14.69	14.67	14.65	14.63	14.61	14.59	62
63	15.14	15.10	15.08	15.06	15.04	15.02	15.00	14.99	14.97	14.95	14.93	14.91	14.89	14.87	14.85	14.83	14.81	63
64	15.36	15.32	15.30	15.28	15.26	15.24	15.23	15.21	15.19	15.17	15.15	15.13	15.11	15.09	15.07	15.05	15.03	64
65	15.58	15.54	15.52	15.50	15.48	15.46	15.45	15.43	15.41	15.39	15.37	15.35	15.33	15.31	15.29	15.27	15.25	65
66	15.80	15.76	15.74	15.72	15.70	15.68	15.66	15.65	15.63	15.61	15.59	15.57	15.55	15.53	15.51	15.49	15.47	66
67	16.02	15.98	15.96	15.94	15.92	15.90	15.88	15.87	15.85	15.83	15.81	15.79	15.77	15.75	15.73	15.71	15.69	67
68	16.24	16.20	16.18	16.16	16.14	16.12	16.10	16.09	16.07	16.05	16.03	16.01	15.99	15.97	15.95	15.93	15.91	68
69	16.46	16.42	16.40	16.38	16.36	16.34	16.33	16.31	16.29	16.27	16.25	16.23	16.21	16.19	16.17	16.15	16.13	69
70	16.68	16.64	16.62	16.60	16.58	16.56	16.55	16.53	16.51	16.49	16.47	16.45	16.43	16.41	16.39	16.37	16.35	70
71	16.90	16.86	16.84	16.82	16.80	16.78	16.77	16.75	16.73	16.71	16.69	16.67	16.65	16.63	16.61	16.59	16.57	71
72	17.12	17.08	17.06	17.04	17.02	17.00	16.98	16.97	16.95	16.93	16.91	16.89	16.87	16.85	16.83	16.81	16.79	72
73	17.34	17.30	17.28	17.26	17.24	17.22	17.20	17.19	17.17	17.15	17.13	17.11	17.09	17.07	17.05	17.03	17.01	73
74	17.56	17.52	17.50	17.48	17.46	17.44	17.43	17.41	17.39	17.37	17.35	17.33	17.31	17.29	17.27	17.25	17.23	74
75	17.78	17.74	17.72	17.70	17.68	17.66	17.65	17.63	17.61	17.59	17.57	17.55	17.53	17.51	17.49	17.47	17.45	75
76	18.00	17.96	17.94	17.92	17.90	17.88	17.86	17.85	17.83	17.81	17.79	17.77	17.75	17.73	17.71	17.69	17.67	76
77	18.22	18.18	18.16	18.14	18.12	18.10	18.08	18.07	18.05	18.03	18.01	17.99	17.97	17.95	17.93	17.91	17.89	77
78	18.44	18.40	18.38	18.36	18.34	18.32	18.30	18.29	18.27	18.25	18.23	18.21	18.19	18.17	18.15	18.13	18.11	78
79	18.66	18.62	18.60	18.58	18.56	18.54	18.53	18.51	18.49	18.47	18.45	18.43	18.41	18.39	18.37	18.35	18.33	79
80	18.88	18.84	18.82	18.80	18.78	18.76	18.75	18.73	18.71	18.69	18.67	18.65	18.63	18.61	18.59	18.57	18.55	80

Box 10.0 to 20.5

Tenths of the polarization reading	Per cent error	Tenths of the polarization reading	
		Per cent error	Per cent increase
0.1	0.02	0.6	0.15
0.2	0.05	0.7	0.17
0.3	0.07	0.8	0.20
0.4	0.09	0.9	0.22
0.5	0.12		

Table II—continued

Subscripted month	Degree Day												Winter month				
	26.0	26.4	21.0	31.5	23.0	23.5	23.4	23.5	24.5	25.9	25.4	26.0		26.5	27.0	27.5	28.4	28.5
41	9.87	9.53	9.63	9.81	9.70	9.77	9.74	9.73	9.71	9.69	9.67	10.57	11.01	11.93	13.10	13.04	15.01
42	10.11	10.08	10.07	10.05	10.03	10.01	9.99	9.97	9.97	9.96	9.94	10.12	10.25	12.19	13.07	13.25	15.21
43	10.35	10.33	10.31	10.29	10.27	10.25	10.23	10.20	10.18	10.16	10.14	10.35	10.57	12.43	13.30	13.48	15.44
44	10.59	10.57	10.55	10.53	10.48	10.46	10.44	10.42	10.40	10.38	10.36	10.59	10.81	12.65	13.52	13.70	15.66
45	10.83	10.81	10.79	10.77	10.75	10.72	10.70	10.68	10.66	10.63	10.61	10.85	11.07	12.91	13.78	13.96	15.92
46	11.07	11.05	11.03	11.01	10.98	10.96	10.94	10.92	10.89	10.87	10.85	11.09	11.31	13.15	14.02	14.20	16.16
47	11.31	11.29	11.27	11.25	11.22	11.20	11.18	11.15	11.13	11.11	11.08	11.32	11.54	13.38	14.25	14.43	16.39
48	11.55	11.53	11.51	11.49	11.46	11.44	11.41	11.39	11.37	11.34	11.32	11.56	11.78	13.62	14.49	14.67	16.63
49	11.80	11.77	11.75	11.72	11.70	11.68	11.65	11.63	11.60	11.58	11.56	11.80	12.02	13.86	14.73	14.91	16.87
50	12.04	12.01	11.99	11.96	11.94	11.91	11.89	11.87	11.84	11.82	11.79	12.03	12.25	14.09	14.96	15.14	17.10
51	12.28	12.25	12.23	12.20	12.18	12.15	12.13	12.10	12.08	12.06	12.03	12.27	12.49	14.33	15.20	15.38	17.34
52	12.52	12.49	12.47	12.44	12.42	12.39	12.37	12.34	12.32	12.30	12.28	12.52	12.74	14.58	15.45	15.63	17.58
53	12.76	12.73	12.71	12.68	12.66	12.63	12.61	12.58	12.56	12.54	12.52	12.76	12.98	14.82	15.69	15.87	17.82
54	13.00	12.97	12.95	12.92	12.90	12.87	12.85	12.82	12.80	12.78	12.76	13.00	13.22	15.06	15.93	16.11	18.07
55	13.24	13.21	13.19	13.16	13.13	13.11	13.08	13.05	13.02	13.00	12.98	13.22	13.44	15.28	16.15	16.33	18.29
56	13.48	13.45	13.43	13.40	13.37	13.34	13.32	13.29	13.26	13.24	13.21	13.45	13.67	15.51	16.38	16.56	18.52
57	13.72	13.70	13.67	13.64	13.61	13.58	13.55	13.53	13.50	13.47	13.44	13.68	13.90	15.74	16.61	16.79	18.75
58	13.96	13.94	13.91	13.88	13.85	13.82	13.79	13.76	13.74	13.71	13.68	13.92	14.14	15.98	16.85	17.03	19.01
59	14.20	14.18	14.15	14.12	14.09	14.06	14.03	14.00	13.97	13.94	13.91	14.15	14.37	16.21	17.08	17.26	19.23
60	14.44	14.42	14.39	14.36	14.33	14.30	14.27	14.24	14.21	14.18	14.15	14.39	14.61	16.45	17.32	17.50	19.47
61	14.68	14.66	14.63	14.60	14.57	14.54	14.51	14.48	14.45	14.42	14.39	14.63	14.85	16.69	17.56	17.74	19.71
62	14.92	14.90	14.87	14.84	14.80	14.77	14.74	14.71	14.68	14.65	14.62	14.86	15.08	16.92	17.79	17.97	19.95
63	15.16	15.14	15.11	15.07	15.04	15.01	14.98	14.95	14.92	14.89	14.86	15.10	15.32	17.16	18.03	18.21	20.19
64	15.40	15.38	15.35	15.31	15.28	15.25	15.22	15.19	15.16	15.12	15.09	15.33	15.55	17.39	18.26	18.44	20.43
65	15.64	15.62	15.59	15.55	15.52	15.49	15.46	15.42	15.39	15.36	15.33	15.57	15.79	17.62	18.49	18.67	20.67
66	15.88	15.86	15.82	15.79	15.76	15.73	15.69	15.66	15.63	15.60	15.57	15.81	16.03	17.86	18.73	18.91	20.91
67	16.12	16.10	16.06	16.03	16.00	15.97	15.93	15.90	15.87	15.84	15.81	16.05	16.27	18.10	18.97	19.15	21.15
68	16.36	16.34	16.30	16.27	16.24	16.21	16.17	16.14	16.10	16.07	16.04	16.28	16.50	18.33	19.20	19.38	21.39
69	16.60	16.57	16.54	16.51	16.48	16.45	16.41	16.37	16.34	16.31	16.28	16.52	16.74	18.57	19.44	19.62	21.63
70	16.84	16.82	16.78	16.75	16.71	16.68	16.65	16.61	16.58	16.55	16.51	16.75	16.97	18.80	19.67	19.85	21.87
71	17.08	17.06	17.02	16.99	16.95	16.92	16.88	16.85	16.81	16.78	16.74	16.98	17.20	19.03	19.90	20.08	22.11
72	17.32	17.30	17.26	17.23	17.19	17.16	17.12	17.09	17.05	17.02	16.98	17.22	17.44	19.27	20.14	20.32	22.35
73	17.56	17.54	17.50	17.47	17.43	17.40	17.36	17.33	17.29	17.25	17.22	17.46	17.68	19.51	20.38	20.56	22.59
74	17.80	17.78	17.74	17.71	17.67	17.63	17.60	17.56	17.52	17.49	17.45	17.69	17.91	19.74	20.61	20.79	22.83
75	18.04	18.02	17.98	17.95	17.91	17.87	17.83	17.80	17.76	17.72	17.68	17.92	18.14	19.97	20.84	21.02	23.07
76	18.28	18.26	18.22	18.19	18.15	18.11	18.07	18.04	18.00	17.96	17.92	18.16	18.38	20.21	21.08	21.26	23.31
77	18.52	18.50	18.46	18.43	18.39	18.35	18.31	18.27	18.23	18.20	18.16	18.40	18.62	20.44	21.31	21.49	23.55
78	18.76	18.74	18.70	18.65	18.61	18.57	18.53	18.49	18.45	18.41	18.37	18.61	18.83	20.66	21.53	21.71	23.79
79	19.00	18.98	18.94	18.89	18.85	18.81	18.77	18.73	18.69	18.65	18.61	18.85	19.07	20.90	21.77	21.95	24.03
80	19.24	19.22	19.18	19.14	19.10	19.06	19.02	18.98	18.94	18.90	18.86	19.10	19.32	21.13	22.00	22.18	24.27

Table II—continued

Polarization reading	Degree Rx												Polarization reading				
	28.5	29.0	29.5	30.0	30.5	31.0	31.5	32.0	32.5	33.0	33.5	34.0					
81	18.85	19.45	19.88	20.37	20.82	21.34	21.81	22.22	22.58	22.90	23.19	23.46	23.71	23.95	24.18	24.39	
82	19.06	19.64	20.06	20.53	21.00	21.44	21.85	22.22	22.56	22.87	23.15	23.41	23.65	23.87	24.08	24.28	
83	19.29	19.86	20.27	20.73	21.19	21.62	22.02	22.39	22.73	23.04	23.32	23.58	23.82	24.04	24.25	24.45	
84	19.52	20.10	20.51	20.97	21.43	21.86	22.26	22.63	22.97	23.28	23.56	23.82	24.06	24.28	24.49	24.69	
85	19.75	20.34	20.75	21.21	21.67	22.08	22.46	22.82	23.16	23.48	23.77	24.04	24.29	24.52	24.74	24.95	
86	19.99	20.58	20.99	21.45	21.92	22.33	22.71	23.08	23.42	23.74	24.03	24.30	24.56	24.80	25.02	25.23	
87	20.21	20.81	21.22	21.68	22.15	22.56	22.94	23.31	23.65	23.98	24.29	24.58	24.85	25.10	25.34	25.56	
88	20.44	21.04	21.45	21.91	22.38	22.79	23.17	23.54	23.89	24.22	24.53	24.82	25.09	25.34	25.58	25.81	
89	20.67	21.27	21.68	22.14	22.61	23.02	23.40	23.77	24.12	24.45	24.77	25.07	25.35	25.61	25.86	26.09	
90	20.91	21.51	21.92	22.38	22.85	23.26	23.64	23.99	24.34	24.67	24.99	25.29	25.57	25.83	26.08	26.31	
91	21.15	21.75	22.16	22.62	23.09	23.50	23.88	24.24	24.59	24.92	25.24	25.54	25.82	26.08	26.33	26.56	
92	21.38	21.98	22.39	22.85	23.32	23.73	24.11	24.47	24.82	25.15	25.47	25.77	26.05	26.31	26.56	26.79	
93	21.61	22.21	22.62	23.08	23.55	23.96	24.34	24.70	25.05	25.38	25.70	26.00	26.28	26.54	26.79	27.02	
94	21.84	22.44	22.85	23.31	23.78	24.19	24.57	24.93	25.28	25.61	25.93	26.23	26.51	26.77	27.02	27.25	
95	22.07	22.67	23.08	23.54	24.01	24.42	24.80	25.16	25.51	25.84	26.16	26.46	26.74	27.00	27.25	27.47	
96	22.30	22.90	23.31	23.77	24.24	24.65	25.03	25.39	25.74	26.07	26.39	26.69	26.97	27.23	27.47	27.69	
97	22.54	23.14	23.55	24.01	24.48	24.89	25.27	25.63	25.98	26.31	26.63	26.93	27.21	27.46	27.69	27.91	
98	22.78	23.38	23.79	24.25	24.72	25.13	25.51	25.87	26.22	26.55	26.87	27.17	27.45	27.70	27.93	28.15	
99	23.01	23.61	24.02	24.48	24.95	25.36	25.74	26.10	26.45	26.78	27.10	27.40	27.68	27.93	28.16	28.37	
100	23.25	23.85	24.26	24.72	25.19	25.60	25.98	26.34	26.69	27.02	27.34	27.64	27.92	28.17	28.40	28.61	
101	23.48	24.08	24.49	24.95	25.42	25.83	26.21	26.57	26.92	27.25	27.57	27.87	28.15	28.40	28.63	28.84	
102	23.71	24.31	24.72	25.18	25.65	26.06	26.44	26.80	27.15	27.48	27.80	28.10	28.38	28.63	28.86	29.07	
103	23.95	24.55	24.96	25.42	25.89	26.30	26.68	27.04	27.39	27.72	28.04	28.34	28.62	28.87	29.10	29.31	
104	24.18	24.78	25.19	25.65	26.12	26.53	26.91	27.27	27.62	27.95	28.27	28.57	28.85	29.10	29.33	29.54	
105	24.41	25.01	25.42	25.88	26.35	26.76	27.14	27.50	27.85	28.18	28.50	28.80	29.08	29.33	29.56	29.77	
106	24.64	25.24	25.65	26.11	26.58	26.99	27.37	27.73	28.08	28.41	28.73	29.03	29.31	29.56	29.79	30.00	
107	24.87	25.47	25.88	26.34	26.81	27.22	27.60	27.96	28.31	28.64	28.96	29.26	29.54	29.79	30.02	30.23	
108	25.10	25.70	26.11	26.57	27.04	27.45	27.83	28.19	28.54	28.87	29.19	29.49	29.77	29.99	30.20	30.40	
109	25.33	25.93	26.34	26.80	27.27	27.68	28.06	28.42	28.77	29.10	29.42	29.72	29.99	30.21	30.41	30.61	
110	25.56	26.16	26.57	27.03	27.50	27.91	28.29	28.65	28.99	29.32	29.64	29.94	30.21	30.43	30.63	30.83	
Box 10 0 to 28 5																	
Turns of the polariscope reading		Per cent increase		Turns of the polariscope reading		Per cent increase		Turns of the polariscope reading		Per cent increase		Turns of the polariscope reading		Per cent increase		Turns of the polariscope reading	
91	0.1	0.02	0.06	0.15	0.22	0.29	0.36	0.43	0.50	0.57	0.64	0.71	0.78	0.85	0.92	0.99	1.06
92	0.2	0.05	0.07	0.17	0.26	0.34	0.42	0.50	0.58	0.66	0.74	0.82	0.90	0.98	1.06	1.14	1.22
93	0.3	0.07	0.08	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
94	0.4	0.08	0.09	0.23	0.34	0.45	0.56	0.67	0.78	0.89	1.00	1.11	1.22	1.33	1.44	1.55	1.66
95	0.5	0.10	0.10	0.26	0.38	0.50	0.62	0.74	0.86	0.98	1.10	1.22	1.34	1.46	1.58	1.70	1.82

Table III - Table of Factors for the Calculation of Pol Per Cent Juice from Pol Reading for Use in the Dry Lead Method with Undiluted Solutions

Degrees Reax	Factor	Degrees Reax	Factor
0.5	3 84273	16.5	4 09450
1.0	3 85023	17.0	4 10285
1.5	3 85769	17.5	4 11119
2.0	3 86519	18.0	4 11962
2.5	3 87273	18.5	4 12804
3.0	3 88027	19.0	4 13650
3.5	3 88785	19.5	4 14496
4.0	3 89546	20.0	4 15350
4.5	3 90308	20.5	4 16204
5.0	3 91077	21.0	4 17062
5.5	3 91842	21.5	4 17923
6.0	3 92615	22.0	4 18788
6.5	3 93388	22.5	4 19658
7.0	3 94165	23.0	4 20527
7.5	3 94942	23.5	4 21400
8.0	3 95723	24.0	4 22277
8.5	3 96512	24.5	4 23158
9.0	3 97296	25.0	4 24042
9.5	3 98088	25.5	4 24931
10.0	3 98881	26.0	4 25819
10.5	3 99677	26.5	4 26712
11.0	4 00473	27.0	4 27608
11.5	4 01277	27.5	4 28508
12.0	4 02081	28.0	4 29412
12.5	4 02885	28.5	4 30315
13.0	4 03696	29.0	4 31227
13.5	4 04508	29.5	4 32138
14.0	4 05327	30.0	4 33054
14.5	4 06146	30.5	4 33973
15.0	4 06965	31.0	4 34896
15.5	4 07792	31.5	4 35823
16.0	4 08619	32.0	4 36750

NOTE 1—These factors have been calculated from data in column 2 of Table XVI using the formula

$$\text{Pol factor} = 100 \times \frac{\text{apparent density at } 20^{\circ}\text{C}}{26.000}$$

The values have been calculated to seven significant figures and rounded to six significant figures using the round ng rule in British Standards 1957

Note 2—Due to rounding errors and differences in original data there may be discrepancies in the second decimal place of pol. Between values calculated using these factors and those obtained from Table II. Providing sufficient significant figures are used in the calculation the values obtained using the pol factors of this table are to be considered the correct result

Table IV.—Pol Bigamese from Polariscope Reading (400 mm Tube) and Moisture Content (clarified with dry lead)

Moisture in bigamese	Polariscope reading of extract in 400 mm tube																				Moisture in bigamese		
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35			
40	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
41	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178
42	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
43	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
44	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
45	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
46	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
47	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
48	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
49	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
50	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
51	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
52	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
53	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
54	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
55	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
56	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
57	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
58	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
59	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
60	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
61	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
62	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
63	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
64	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158
65	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158

Table IV—continued

Moisture in bagasse	Polarographic reading of extract in 600 mm tube																				Moisture in bagasse					
	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55		56	57	58	59	60
40	4.90	5.04	5.18	5.31	5.43	5.59	5.72	5.86	6.00	6.13	6.27	6.41	6.55	6.68	6.82	6.96	7.10	7.24	7.38	7.51	7.65	7.79	7.93	8.07	8.21	40
41	4.90	5.03	5.18	5.31	5.43	5.59	5.72	5.86	6.00	6.14	6.28	6.42	6.55	6.69	6.83	6.97	7.11	7.24	7.38	7.52	7.66	7.80	7.93	8.07	8.21	41
42	4.91	5.05	5.19	5.32	5.46	5.60	5.74	5.87	6.01	6.12	6.25	6.43	6.57	6.70	6.84	6.98	7.12	7.25	7.39	7.53	7.67	7.81	7.94	8.08	8.22	42
43	4.91	5.05	5.19	5.32	5.46	5.60	5.74	5.87	6.01	6.13	6.26	6.43	6.57	6.71	6.84	6.98	7.11	7.25	7.40	7.54	7.68	7.81	7.95	8.10	8.23	43
44	4.92	5.06	5.20	5.35	5.47	5.61	5.75	5.89	6.03	6.15	6.29	6.44	6.58	6.72	6.86	7.00	7.14	7.27	7.41	7.55	7.69	7.83	7.97	8.11	8.24	44
45	4.92	5.06	5.20	5.34	5.48	5.62	5.76	5.90	6.04	6.17	6.31	6.45	6.59	6.73	6.87	7.01	7.15	7.29	7.42	7.56	7.70	7.84	7.98	8.12	8.25	45
46	4.93	5.07	5.21	5.34	5.48	5.63	5.77	5.91	6.05	6.18	6.32	6.46	6.60	6.74	6.88	7.02	7.16	7.30	7.44	7.57	7.71	7.85	7.99	8.13	8.27	46
47	4.94	5.08	5.22	5.35	5.49	5.63	5.77	5.91	6.05	6.18	6.32	6.46	6.60	6.74	6.88	7.02	7.16	7.30	7.44	7.58	7.72	7.86	8.00	8.14	8.28	47
48	4.94	5.08	5.22	5.35	5.49	5.63	5.77	5.91	6.05	6.18	6.32	6.46	6.60	6.74	6.88	7.02	7.16	7.30	7.44	7.58	7.72	7.86	8.00	8.14	8.28	48
49	4.95	5.09	5.23	5.36	5.50	5.64	5.78	5.92	6.06	6.19	6.33	6.47	6.61	6.75	6.89	7.03	7.17	7.31	7.45	7.59	7.73	7.87	8.01	8.15	8.29	49
50	4.95	5.09	5.23	5.37	5.51	5.65	5.79	5.93	6.07	6.20	6.34	6.48	6.62	6.76	6.90	7.04	7.18	7.32	7.46	7.60	7.74	7.88	8.02	8.16	8.30	50
51	4.95	5.09	5.23	5.37	5.51	5.65	5.79	5.93	6.07	6.21	6.35	6.49	6.63	6.77	6.91	7.05	7.19	7.33	7.47	7.61	7.75	7.89	8.03	8.17	8.31	51
52	4.96	5.10	5.24	5.38	5.52	5.66	5.80	5.94	6.08	6.22	6.36	6.50	6.64	6.78	6.92	7.06	7.20	7.34	7.48	7.62	7.76	7.90	8.04	8.18	8.32	52
53	4.96	5.10	5.24	5.38	5.52	5.66	5.80	5.94	6.08	6.22	6.36	6.50	6.64	6.78	6.92	7.06	7.20	7.34	7.48	7.62	7.76	7.90	8.04	8.18	8.32	53
54	4.97	5.11	5.25	5.39	5.53	5.67	5.81	5.95	6.09	6.23	6.37	6.51	6.65	6.79	6.93	7.07	7.21	7.35	7.49	7.63	7.77	7.91	8.05	8.19	8.33	54
55	4.97	5.11	5.25	5.39	5.53	5.67	5.81	5.95	6.09	6.24	6.38	6.52	6.66	6.80	6.94	7.08	7.22	7.36	7.50	7.64	7.78	7.92	8.06	8.20	8.34	55
56	4.98	5.12	5.26	5.40	5.54	5.68	5.82	5.96	6.10	6.24	6.38	6.52	6.66	6.80	6.94	7.08	7.22	7.36	7.50	7.64	7.78	7.92	8.06	8.20	8.34	56
57	4.98	5.12	5.26	5.40	5.54	5.68	5.82	5.96	6.10	6.24	6.38	6.52	6.66	6.80	6.94	7.08	7.22	7.36	7.50	7.64	7.78	7.92	8.06	8.20	8.34	57
58	4.99	5.13	5.27	5.41	5.55	5.69	5.83	5.97	6.11	6.25	6.39	6.53	6.67	6.81	6.95	7.09	7.23	7.37	7.51	7.65	7.79	7.93	8.07	8.21	8.35	58
59	4.99	5.13	5.27	5.41	5.55	5.69	5.83	5.97	6.11	6.25	6.40	6.54	6.68	6.82	6.96	7.10	7.24	7.38	7.52	7.66	7.80	7.94	8.08	8.22	8.36	59
60	5.00	5.14	5.28	5.42	5.56	5.70	5.84	5.98	6.12	6.26	6.40	6.54	6.68	6.82	6.96	7.10	7.24	7.38	7.52	7.66	7.80	7.94	8.08	8.22	8.36	60
61	5.00	5.14	5.28	5.42	5.56	5.70	5.84	5.98	6.12	6.26	6.41	6.55	6.69	6.83	6.97	7.11	7.25	7.40	7.54	7.68	7.82	7.96	8.11	8.25	8.39	61
62	5.01	5.15	5.29	5.43	5.57	5.71	5.85	5.99	6.13	6.27	6.42	6.56	6.70	6.84	6.98	7.12	7.26	7.40	7.54	7.68	7.83	7.97	8.11	8.25	8.39	62
63	5.01	5.15	5.29	5.43	5.57	5.71	5.85	5.99	6.13	6.28	6.43	6.57	6.71	6.85	6.99	7.13	7.27	7.41	7.55	7.69	7.84	7.98	8.12	8.26	8.40	63
64	5.01	5.15	5.29	5.43	5.57	5.71	5.85	6.00	6.14	6.28	6.43	6.57	6.71	6.85	6.99	7.13	7.27	7.41	7.55	7.69	7.84	7.98	8.12	8.26	8.40	64
65	5.01	5.15	5.29	5.43	5.57	5.71	5.85	6.00	6.14	6.28	6.43	6.57	6.71	6.85	6.99	7.13	7.27	7.41	7.55	7.69	7.84	7.98	8.12	8.26	8.40	65

Fehling's Solution (Lane and Eynon Method)

ml sugar solution required	mg reducing-sugar per 100 ml solution, when concentration of sucrose is—									
	0	0.5g	1g	2g	3g	4g	5g	10g	25g	50g*
15	336	335	333	329	325	322	317	307	289	275
16	316	314	312	309	305	301	297	288	271	257
17	298	296	295	291	287	284	280	271	255	241
18	282	280	278	274	271	268	264	256	240	227
19	267	265	264	260	257	254	250	243	227	215
20	255	253	251	248	245	242	238	231	216	204
21	243	241	239	236	233	230	227	220	205	194
22	232	230	228	225	222	220	216	210	195	185
23	222	220	219	216	213	210	207	200	187	176
24	213	211	210	207	204	202	198	192	179	168
25	205	203	202	198	196	194	190	184	171	161
26	197	195	194	191	189	186	183	177	164	155
27	190	189	187	184	182	179	176	170	158	149
28	184	182	180	178	175	173	170	164	152	143
29	178	176	174	171	169	167	165	159	147	138
30	172	170	168	166	164	161	159	153	142	133
31	166	165	163	161	159	157	154	148	137	129
32	161	160	158	156	154	152	149	143	132	125
33	157	155	153	151	149	147	145	139	128	121
34	152	151	149	147	145	143	140	135	124	117
35	148	147	145	143	141	139	136	131	121	113
36	144	143	141	139	137	135	133	127	117	109
37	140	139	137	135	133	131	129	124	114	106
38	137	135	134	131	130	128	126	120	111	103
39	133	132	130	128	126	124	122	117	107	100
40	130	129	127	125	123	121	119	114	104	97
41	127	125	124	122	120	118	116	111	102	95
42	124	123	121	119	117	116	114	109	99	92
43	121	120	118	116	115	113	111	106	97	90
44	119	117	116	114	112	110	108	103	94	88
45	116	114	113	111	110	108	106	101	92	86
46	114	112	111	109	107	105	104	99	90	84
47	111	110	108	106	105	103	102	96	88	82
48	109	108	106	104	103	101	99	94	86	81
49	107	106	104	102	102	100	97	92	84	79
50	105	103	102	100	100	98	95	90	82	77

* Calculated by extrapolation

**Table VI.—Milligrams of Reducing Sugars Required to Reduce 26 ml
Fehling's Solution (Lamé and Eyring Method) of Low Sucrose
Concentrations
To be Used with the Chemical Method of Sucrose Analysis**

ml sugar solution required	mg reducing sugar per 100 ml solution when concentration of sucrose is 0.0g									
	0	1	2	3	4	5	6	7	8	9
20	234.5	253.2	251.9	250.7	249.5	248.2	247.05	245.8	244.7	243.8
21	242.8	241.7	240.5	239.4	238.3	237.2	236.1	235.0	233.9	232.9
22	231.3	230.8	229.7	228.9	227.7	226.7	225.7	224.7	223.7	222.9
23	222.2	221.2	220.25	219.3	218.4	217.5	216.5	215.6	214.7	214.0
24	213.3	212.45	211.6	210.7	209.8	208.95	208.1	207.3	206.5	205.65
25	204.8	204.05	203.3	202.4	201.6	200.8	200.0	199.4	198.8	198.0
26	197.3	196.5	195.8	195.0	194.3	193.5	192.8	192.1	191.4	190.9
27	190.1	189.7	189.0	188.3	187.6	186.9	186.2	185.5	184.9	184.3
28	183.6	182.9	182.3	181.6	181.0	180.3	179.7	179.1	178.6	178.1
29	177.6	177.0	176.3	175.8	175.2	174.6	174.0	173.4	172.8	172.2
30	171.6	171.05	170.5	169.95	169.4	168.85	168.3	167.8	167.3	166.9
31	166.5	165.95	165.4	164.85	164.3	163.8	163.3	162.65	162.2	161.65
32	161.3	160.75	160.25	159.75	159.25	158.8	158.3	157.9	157.5	157.1
33	156.7	156.2	155.7	155.25	154.8	154.35	153.9	153.4	152.95	152.5
34	152.1	151.65	151.2	150.75	150.3	149.9	149.5	149.1	148.7	148.35
35	148.0	147.6	147.15	146.7	146.3	145.9	145.5	145.1	144.7	144.3

ml sugar solution required	mg reducing sugar per 100 ml solution when concentration of sucrose is 0.5g									
	0	1	2	3	4	5	6	7	8	9
20	252.8	251.6	250.3	249.1	247.9	246.6	245.4	244.2	243.2	242.2
21	241.3	240.1	238.9	237.8	236.7	235.6	234.5	233.4	232.3	231.3
22	230.7	229.7	228.1	227.1	226.1	225.1	224.1	223.1	222.1	221.3
23	220.3	219.6	218.7	217.7	216.8	215.9	214.9	214.0	213.1	212.5
24	211.6	210.8	210.0	209.1	208.2	207.3	206.5	205.7	204.9	204.0
25	203.3	202.1	201.7	200.8	200.0	199.2	198.4	197.8	197.2	196.4
26	195.5	194.9	193.2	193.1	192.7	191.9	191.2	190.5	189.8	189.3
27	188.8	188.1	187.4	186.7	186.0	185.3	184.6	183.9	183.3	182.7
28	181.8	181.3	180.7	180.0	179.4	178.7	178.1	177.5	177.0	176.5
29	175.9	175.4	174.8	174.2	173.6	173.0	172.4	171.8	171.2	170.6
30	170.2	169.5	168.9	168.35	167.8	167.25	166.7	166.2	165.7	165.5
31	161.7	161.3	160.8	160.25	162.7	162.2	161.8	161.05	160.6	160.05
32	159.6	159.2	158.6	158.15	157.65	157.20	156.7	156.3	155.9	155.5
33	154.9	154.6	154.1	153.65	153.2	152.75	152.3	151.8	151.35	150.9
34	150.6	150.0	149.6	149.15	148.7	148.3	147.95	147.5	147.1	146.75
35	146.6	146.0	145.5	145.1	144.7	144.3	143.9	143.4	143.1	142.7

Table VII—Specific Rotation of Sugars

Sugar	Formula	Specific rotation in water $[\alpha]_D^{20}$
d-Glucose	$C_6H_{12}O_6$	+ 52.5
d-Galactose	$C_6H_{12}O_6$	+ 80.5
d-Mannose	$C_6H_{12}O_6$	+ 14.6
d-Fructose	$C_6H_{12}O_6$	- 92.5
d-Xylose	$C_5H_{10}O_5$	+ 19
d-Lyxose	$C_5H_{10}O_5$	- 14
d-Arabinose	$C_5H_{10}O_5$	- 105
l-Rhamnose	$C_6H_{12}O_6$	+ 8.9
a-Glucoheptose	$C_7H_{14}O_7$	- 20
Lactose	$C_{12}H_{22}O_{11}$	+ 55.3
Maltose	$C_{12}H_{22}O_{11}$	+ 136
Melibiose	$C_{12}H_{22}O_{11}$	+ 142.3
Cellobiose	$C_{12}H_{22}O_{11}$	+ 35
Sucrose	$C_{12}H_{22}O_{11}$	+ 66.3
Raffinose	$C_{18}H_{32}O_{16}$	+ 105.5

Table VIII—Refractive Indices of Sugar Solutions at 20°C in Air at 20°C, 760 mm Pressure and 50 per cent Relative Humidity

The following values are according to the smoothed measured values of the Physikalisch-Technische Bundesanstalt in West Germany, and have been computed from the polynomial adopted by the ICUMSA 1966.

$$n_{D,air} = 1.33298731 + 0.142935392 \times 10^{-2} \times P_w \\ + 0.517183404 \times 10^{-4} P_w^2 + 0.23320854 \times 10^{-7} \times P_w^3 \\ - 0.410680669 \times 10^{-10} \times P_w^4$$

P = sugar concentration as percentage by weight in air at 20°C 760 mm pressure and 50 per cent relative humidity.

% Sucrose	Refractive index (n_D^{20})	% Sucrose	Refractive index (n_D^{20})	% Sucrose	Refractive index (n_D^{20})
0.0	1.332987	30.0	1.381119	60.0	1.441872
1.0	1.334422	31.0	1.382924	61.0	1.444147
2.0	1.335867	32.0	1.384744	62.0	1.446439
3.0	1.337323	33.0	1.386578	63.0	1.448748
4.0	1.338789	34.0	1.388426	64.0	1.451074
5.0	1.340266	35.0	1.390288	65.0	1.453418
6.0	1.341755	36.0	1.392166	66.0	1.44577
7.0	1.343254	37.0	1.394058	67.0	1.45815
8.0	1.344765	38.0	1.395965	68.0	1.46055
9.0	1.346287	39.0	1.397887	69.0	1.46296
10.0	1.347821	40.0	1.399824	70.0	1.46539
11.0	1.349366	41.0	1.401776	71.0	1.46784
12.0	1.350924	42.0	1.403743	72.0	1.47031
13.0	1.352493	43.0	1.405726	73.0	1.47279
14.0	1.354074	44.0	1.407724	74.0	1.47529
15.0	1.355668	45.0	1.409738	75.0	1.47782
16.0	1.357274	46.0	1.411767	76.0	1.48035
17.0	1.358892	47.0	1.413812	77.0	1.48291
18.0	1.360523	48.0	1.415873	78.0	1.48548
19.0	1.362168	49.0	1.417950	79.0	1.48808
20.0	1.363823	50.0	1.420043	80.0	1.49069
21.0	1.365493	51.0	1.422152	81.0	1.49332
22.0	1.367175	52.0	1.424277	82.0	1.49597
23.0	1.368871	53.0	1.426419	83.0	1.49863
24.0	1.370580	54.0	1.428577	84.0	1.50132
25.0	1.372302	55.0	1.430751	85.0	1.50402
26.0	1.374038	56.0	1.432942		
27.0	1.375787	57.0	1.435149		
28.0	1.377551	58.0	1.437373		
29.0	1.379328	59.0	1.439614		

Table IX—International Table of Temperature Corrections for the Abbe Refractometer Calibrated at 20° C

Temp. °C	Per cent sucrose										Temp. °C
	0	5	10	15	20	30	40	50	60	70	
Subtract from the per cent sucrose.											
11	0.50	0.54	0.58	0.61	0.64	0.68	0.72	0.74	0.76	0.79	10
12	0.46	0.49	0.53	0.55	0.58	0.62	0.65	0.67	0.69	0.71	11
13	0.42	0.45	0.48	0.50	0.52	0.56	0.58	0.60	0.61	0.63	12
14	0.37	0.40	0.42	0.44	0.46	0.49	0.51	0.53	0.54	0.55	13
15	0.33	0.35	0.37	0.39	0.40	0.42	0.44	0.45	0.46	0.48	14
16	0.27	0.29	0.31	0.33	0.34	0.35	0.37	0.38	0.39	0.40	15
17	0.22	0.24	0.25	0.26	0.27	0.28	0.30	0.30	0.31	0.32	16
18	0.17	0.18	0.19	0.20	0.21	0.21	0.22	0.23	0.23	0.24	17
19	0.12	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.16	0.16	18
	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	19
Add to the per cent sucrose.											
21	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	21
22	0.13	0.13	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.16	22
23	0.19	0.20	0.21	0.22	0.22	0.23	0.23	0.24	0.24	0.24	23
24	0.26	0.27	0.28	0.29	0.30	0.31	0.31	0.31	0.32	0.32	24
25	0.33	0.35	0.36	0.37	0.38	0.39	0.40	0.40	0.40	0.40	25
26	0.40	0.42	0.43	0.44	0.45	0.47	0.48	0.48	0.48	0.48	26
27	0.48	0.50	0.52	0.53	0.54	0.55	0.56	0.56	0.56	0.56	27
28	0.56	0.57	0.60	0.61	0.62	0.63	0.64	0.64	0.64	0.64	28
29	0.64	0.66	0.68	0.69	0.71	0.72	0.73	0.73	0.73	0.73	29
30	0.72	0.74	0.77	0.78	0.79	0.80	0.81	0.81	0.81	0.81	30

Table X—Clerget Divisors

When analyses are conducted according to Jackson Giffis Method IV, the presently accepted formula for conversion of polariscope (saccharimeter) readings to sucrose concentration is:

$$S = 100 \frac{(P - P^i)}{132.63 + 0.0794(m - 13) - 0.53(t - 20)}$$

where S = sucrose per cent in sample.

P = direct reading calculated to basis of normal solution.

P^i = invert reading calculated to basis of normal solution

m = concentration of dissolved solids in g per 100 ml of solution as read in polariscope.

t = temperature in °C.

The basic value 132.63 applies to the Walker method of inversion (heat to 65°C, add acid, allow to cool). For inversion by the U.S. Customs method (add acid, immerse in 60°C bath, stir for 3 min, hold for 7 more min, cool quickly) the basic value is 132.56, whilst for inversion at room temperature (24 h) the value is 132.66.

For invertase inversion the Clerget divisor is given by the formula—

$$132.1 + 0.0833(m - 13) - 0.53(t - 20).$$

Using the Walker method of inversion some useful Clerget divisors, at 20°C, are:

Jalcos—The divisor is related to the Brix as follows:

Table X (a)

Brix	Clerget Divisor	Brix	Clerget Divisor
8	131.92	18	132.31
10	131.99	20	132.39
12	132.07	22	132.47
14	132.15	24	132.55
16	132.23	26	132.63

Sugars—For all sugars the value 132.63 at 20°C may be adopted:

Melasses—For normal samples of molasses the value 131.88 at 20°C may be adopted.

For other materials or other methods of inversion the divisor must be calculated from the specific data. All Clerget divisors must be corrected for temperature according to the table.

Table XI—Subtractive Temperature Corrections for Clerget Divisions

°C	-0	-1	-2	-3	-4	-5	-6	-7	-8	-9
20	0-00	0-05	0-11	0-16	0-21	0-27	0-32	0-37	0-42	0-48
21	0-53	0-58	0-64	0-69	0-74	0-80	0-85	0-90	0-95	1-01
22	1-06	1-11	1-17	1-22	1-27	1-33	1-38	1-43	1-48	1-54
23	1-59	1-64	1-70	1-75	1-80	1-86	1-91	1-96	2-01	2-07
24	2-12	2-17	2-23	2-28	2-33	2-39	2-44	2-49	2-54	2-60
25	2-65	2-70	2-76	2-82	2-87	2-92	2-97	3-02	3-07	3-13
26	3-18	3-23	3-29	3-34	3-39	3-44	3-50	3-55	3-60	3-66
27	3-71	3-76	3-82	3-87	3-92	3-98	4-03	4-08	4-13	4-19
28	4-24	4-29	4-35	4-40	4-45	4-51	4-56	4-61	4-66	4-72
29	4-77	4-82	4-88	4-93	4-98	5-04	5-09	5-14	5-19	5-25
30	5-30	5-35	5-41	5-46	5-51	5-57	5-62	5-67	5-72	5-78
31	5-83	5-88	5-94	5-99	6-04	6-10	6-15	6-20	6-25	6-31
32	6-36	6-41	6-47	6-52	6-57	6-63	6-68	6-73	6-78	6-84
33	6-89	6-94	7-00	7-05	7-10	7-16	7-21	7-26	7-31	7-37
34	7-42	7-47	7-53	7-58	7-63	7-69	7-74	7-79	7-84	7-90
35	7-95	8-00	8-06	8-11	8-16	8-22	8-27	8-32	8-37	8-43

Table XII—Dilution Indicator of Raw Sugar

Moisture per cent	Pol per cent										
	97-6	97-8	98-0	98-2	98-4	98-6	98-8	99-0	99-2	99-4	99-6
0-20	9	10	11	13	14	17	20	25	33	50	100
0-22	10	11	12	14	16	19	22	28	38	58	122
0-24	11	12	14	15	18	21	25	32	43	67	..
0-26	12	13	15	17	19	23	28	35	48	76	..
0-28	13	15	16	18	21	25	30	39	54	88	..
0-30	14	16	18	20	23	27	33	43	60	100	..
0-32	15	17	19	22	25	30	36	47	67	114	..
0-34	17	18	20	23	27	32	40	45	74	131	..
0-36	18	20	22	25	29	35	43	56	82	..	..
0-38	19	21	23	27	31	37	46	61	90	..	..
0-40	20	22	25	29	33	40	50	67	100	..	..
0-42	21	24	27	30	36	43	54	72	..	..	..
0-44	22	25	28	32	38	46	58	79	..	..	..
0-46	24	26	30	34	40	49	62	85	..	..	..
0-48	25	28	32	36	43	52	67	92	..	..	..
0-50	26	29	33	38	45	56	71	..	..	..	..
0-52	28	31	35	41	48	59	76	..	..	..	..
0-54	29	33	37	43	51	63	82	..	..	..	..
0-56	30	34	39	45	54	67	88	..	..	..	..
0-58	32	36	41	48	57	71	..	..	..	..	..
0-60	33	38	43	50	60	75	..	..	..	..	..
0-62	35	39	45	53	63	79	..	..	..	..	..
0-64	36	41	47	55	67	84	..	..	..	..	..
0-66	38	43	49	58	70	..	..	..	..	..	..
0-68	40	45	52	61	74	..	..	..	..	..	..
0-70	41	47	54	64	78	..	..	..	..	..	..
0-72	43	49	56	67	82	..	..	..	..	..	..
0-74	45	51	59	70	..	..	..	..	..	..	..
0-76	46	53	61	73	..	..	..	..	..	..	..
0-78	48	55	64	76	..	..	..	..	..	..	..
0-80	50	57	67	80	..	..	..	..	..	..	..

Table XIII—Solubility of Sucrose in Water in g Sucrose (S) per 100 g Water.
 According to Charles, Amer. Chem. Soc., 1958 Abst. of Papers p. 10D.
 Reported in Honig "Principles of Sugar Technology", 2, 228.

°C	S	°C	S	°C	S	°C	S	°C	S
0	181.0	19	198.2	37	227.3	55	271.9	73	337.6
1	181.5	20	199.5	38	229.4	56	275.0	74	342.1
2	182.2	21	200.8	39	231.5	57	278.1	75	346.4
3	182.8	22	202.1	40	233.6	58	281.2	76	351.1
4	183.5	23	203.5	41	235.8	59	284.5	77	355.8
5	184.3	24	205.0	42	238.0	60	287.7	78	360.6
6	185.1	25	206.4	43	240.3	61	291.1	79	365.5
7	185.9	26	207.9	44	242.6	62	294.6	80	370.6
8	186.6	27	209.5	45	244.9	63	298.1	81	375.5
9	187.5	28	211.0	46	247.3	64	301.6	82	380.8
10	188.4	29	212.7	47	249.9	65	305.4	83	386.1
11	189.4	30	214.4	48	252.5	66	309.2	84	391.6
12	190.4	31	216.1	49	255.1	67	312.9	85	397.0
13	191.4	32	217.9	50	257.8	68	316.8	86	402.8
14	192.4	33	219.7	51	260.5	69	320.9	87	408.4
15	193.5	34	221.4	52	263.2	70	324.8	88	414.4
16	194.6	35	223.4	53	266.0	71	329.0	89	420.3
17	195.8	36	225.3	54	269.0	72	333.3	90	426.6
18	197.0								

Table XIV—Solubility of Sucrose in Water in g Sucrose (S) per 100 g Solution* (Charles)

°C	S	°C	S	°C	S	°C	S	°C	S
0	64.41	19	66.47	37	69.45	55	73.11	73	77.15
1	64.48	20	66.61	38	69.64	56	73.33	74	77.38
2	64.56	21	66.75	39	69.83	57	73.55	75	77.60
3	64.64	22	66.90	40	70.02	58	73.77	76	77.83
4	64.73	23	67.05	41	70.22	59	73.99	77	78.06
5	64.82	24	67.21	42	70.41	60	74.21	78	78.29
6	64.92	25	67.36	43	70.61	61	74.43	79	78.52
7	65.02	26	67.52	44	70.81	62	74.66	80	78.75
8	65.11	27	67.69	45	71.01	63	74.88	81	78.97
9	65.22	28	67.85	46	71.21	64	75.10	82	79.20
10	65.33	29	68.02	47	71.42	65	75.33	83	79.43
11	65.44	30	68.19	48	71.63	66	75.56	84	79.66
12	65.56	31	68.36	49	71.84	67	75.78	85	79.88
13	65.68	32	68.54	50	72.05	68	76.01	86	80.11
14	65.80	33	68.72	51	72.26	69	76.24	87	80.33
15	65.93	34	68.89	52	72.47	70	76.46	88	80.56
16	66.06	35	69.08	53	72.68	71	76.69	89	80.78
17	66.19	36	69.26	54	72.90	72	76.92	90	81.01
18	66.33								

*Beware of confusion between this Table and Table XIII.

Table XV.—Densities of Solutions of Cane Sugar at 20 C in g/ml
(This table is the basis for standardizing hydrometers indicating per cent of sugar at 20 C)

Per cent sugar	Tenths of per cent										Per cent sugar
	0	1	2	3	4	5	6	7	8	9	
0	0.998234	0.998622	0.999010	0.999398	0.999786	1.000174	1.000563	1.000952	1.001342	1.001731	0
1	1.002120	1.002509	1.002897	1.003286	1.003675	1.004064	1.004453	1.004844	1.005234	1.005624	1
2	1.006015	1.006405	1.006796	1.007188	1.007580	1.007972	1.008363	1.008755	1.009148	1.009541	2
3	1.009934	1.010327	1.010721	1.011115	1.011510	1.011904	1.012298	1.012694	1.013089	1.013485	3
4	1.013881	1.014277	1.014673	1.015070	1.015467	1.015864	1.016261	1.016659	1.017058	1.017456	4
5	1.017854	1.018253	1.018652	1.019052	1.019451	1.019851	1.020251	1.020651	1.021053	1.021454	5
6	1.021855	1.022255	1.022659	1.023061	1.023463	1.023867	1.024270	1.024673	1.025077	1.025481	6
7	1.025885	1.026289	1.026694	1.027099	1.027504	1.027910	1.028316	1.028722	1.029128	1.029535	7
8	1.029942	1.030349	1.030757	1.031165	1.031573	1.031982	1.032391	1.032800	1.033209	1.033619	8
9	1.034029	1.034439	1.034850	1.035260	1.035671	1.036082	1.036494	1.036906	1.037318	1.037730	9
10	1.038143	1.038556	1.038970	1.039383	1.039797	1.040212	1.040626	1.041041	1.041456	1.041872	10
11	1.042288	1.042704	1.043121	1.043537	1.043954	1.044370	1.044788	1.045206	1.045625	1.046043	11
12	1.046462	1.046881	1.047300	1.047720	1.048140	1.048559	1.048980	1.049401	1.049822	1.050243	12
13	1.050665	1.051087	1.051510	1.051933	1.052356	1.052778	1.053202	1.053626	1.054050	1.054475	13
14	1.054600	1.055025	1.055451	1.055876	1.056302	1.056729	1.057155	1.057582	1.058010	1.058437	14
15	1.059165	1.059593	1.060022	1.060451	1.060880	1.061308	1.061738	1.062168	1.062598	1.063029	15
16	1.063460	1.063892	1.064324	1.064756	1.065188	1.065621	1.066054	1.066487	1.066921	1.067355	16
17	1.067789	1.068223	1.068658	1.069093	1.069529	1.069964	1.070400	1.070836	1.071273	1.071710	17
18	1.072147	1.072585	1.073023	1.073461	1.073900	1.074338	1.074777	1.075217	1.075657	1.076097	18
19	1.076537	1.076978	1.077419	1.077860	1.078302	1.078744	1.079187	1.079629	1.080072	1.080515	19
20	1.080959	1.081403	1.081848	1.082292	1.082737	1.083182	1.083628	1.084074	1.084520	1.084967	20
21	1.084414	1.084861	1.085309	1.085757	1.086205	1.086652	1.087101	1.087550	1.088000	1.088450	21
22	1.089000	1.089451	1.089902	1.090353	1.090804	1.091255	1.091706	1.092157	1.092608	1.093060	22
23	1.094420	1.094874	1.095328	1.095782	1.096236	1.096691	1.097147	1.097603	1.098058	1.098514	23
24	1.098971	1.099428	1.099886	1.100344	1.100802	1.101259	1.101718	1.102177	1.102637	1.103097	24
25	1.103557	1.104017	1.104478	1.104938	1.105400	1.105862	1.106324	1.106786	1.107248	1.107711	25
26	1.108175	1.108639	1.109103	1.109568	1.110033	1.110497	1.110963	1.111429	1.111895	1.112361	26
27	1.112828	1.113295	1.113763	1.114232	1.114699	1.115166	1.115635	1.116104	1.116572	1.117042	27
28	1.117512	1.117982	1.118453	1.118923	1.119395	1.119867	1.120339	1.120812	1.121284	1.121757	28
29	1.122231	1.122705	1.123179	1.123653	1.124128	1.124603	1.125079	1.125555	1.126030	1.126507	29

* All weights in vacuo.—International Critical Tables 2, 343

Per cent weight	Tenths of per cent										Per cent weight
	0	1	2	3	4	5	6	7	8	9	
30	126984	127461	127939	128417	128896	129374	129853	130332	130812	131297	39
31	131773	132254	132735	133216	133698	134180	134663	135146	135628	136112	40
32	136596	137080	137565	138049	138534	139020	139506	139993	140479	140966	41
33	141433	141918	142402	142889	143375	143864	144354	144847	145343	145854	42
34	146345	146836	147328	147820	148313	148805	149298	149792	150286	150780	43
35	151275	151770	152265	152760	153256	153752	154249	154746	155242	155740	44
36	156238	156736	157233	157733	158233	158733	159233	159733	160233	160734	45
37	161236	161738	162240	162742	163245	163748	164252	164756	165259	165764	46
38	166269	166775	167281	167786	168293	168800	169307	169815	170322	170831	47
39	171340	171849	172359	172869	173379	173889	174400	174911	175423	175935	48
40	176447	176960	177473	177987	178501	179014	179527	180044	180563	181076	49
41	181592	182108	182625	183142	183660	184178	184696	185215	185734	186253	50
42	186773	187293	187814	188335	188856	189379	189901	190423	190946	191469	51
43	191993	192517	193041	193565	194090	194616	195141	195667	196193	196720	52
44	197247	197775	198303	198832	199360	199890	200420	200950	201480	202010	53
45	202540	203071	203603	204136	204668	205200	205733	206266	206800	207335	54
46	207870	208404	208940	209477	210013	210549	211086	211623	212162	212700	55
47	213236	213777	214317	214856	215395	215936	216476	217017	217559	218101	56
48	218643	219185	219729	220272	220815	221360	221904	222449	222993	223540	57
49	224086	224632	225180	225727	226274	226823	227371	227919	228469	229018	58
50	229567	230117	230668	231219	231770	232322	232874	233426	233979	234532	59
51	235085	235639	236194	236748	237303	237859	238414	238970	239527	240084	60
52	240641	241198	241757	242315	242873	243433	243992	244552	245113	245673	61
53	246234	246795	247358	247920	248482	249046	249609	250172	250737	251301	62
54	251866	252431	252997	253563	254129	254697	255264	255831	256400	256967	63
55	257535	258104	258674	259244	259815	260388	260955	261527	262099	262673	64
56	263346	263916	264490	265063	265637	266212	266786	267361	267937	268513	65
57	268989	269565	270143	270720	271299	271877	272455	273035	273614	274194	66
58	274774	275353	275936	276517	277098	277680	278262	278844	279428	280011	67
59	280595	281179	281764	282349	282932	283521	284107	284694	285281	285869	68
60	286456	287044	287633	288222	288811	289401	289991	290581	291172	291763	69
61	292354	292946	293539	294131	294725	295318	295911	296506	297100	297696	70
62	298291	298886	299483	300079	300677	301274	301871	302470	303068	303668	71
63	304267	304867	305467	306068	306669	307271	307872	308475	309077	309680	72
64	310282	310885	311489	312093	312699	313304	313909	314515	315121	315728	73

Table XV—continued

Per cent sugar	Tenths of per cent										Per cent sugar
	0	1	2	3	4	5	6	7	8	9	
65	1-316334	1-316941	1-317549	1-318157	1-318766	1-319374	1-319983	1-320593	1-321203	1-321814	65
66	1-322425	1-323036	1-323648	1-324259	1-324872	1-325484	1-326097	1-326711	1-327325	1-327940	66
67	1-328534	1-329170	1-329785	1-330401	1-331017	1-331633	1-332250	1-332868	1-333485	1-334103	67
68	1-334722	1-335342	1-335961	1-336581	1-337200	1-337821	1-338441	1-339063	1-339684	1-340306	68
69	1-340928	1-341551	1-342174	1-342798	1-343421	1-344046	1-344671	1-345296	1-345922	1-346547	69
70	1-347174	1-347801	1-348427	1-349055	1-349682	1-350311	1-350939	1-351568	1-352197	1-352827	70
71	1-353456	1-354087	1-354717	1-355349	1-355980	1-356612	1-357245	1-357877	1-358511	1-359144	71
72	1-359778	1-360415	1-361047	1-361682	1-362317	1-362950	1-363590	1-364226	1-364864	1-365501	72
73	1-366154	1-366791	1-367425	1-368058	1-368693	1-369333	1-369973	1-370613	1-371254	1-371894	73
74	1-372536	1-373178	1-373820	1-374463	1-375105	1-375749	1-376392	1-377036	1-377680	1-378326	74
75	1-378971	1-379617	1-380262	1-380909	1-381555	1-382203	1-382851	1-383499	1-384148	1-384796	75
76	1-385446	1-386096	1-386745	1-387396	1-388045	1-388696	1-389347	1-389999	1-390651	1-391303	76
77	1-391936	1-392583	1-393233	1-393881	1-394529	1-395178	1-395826	1-396476	1-397124	1-397773	77
78	1-398305	1-398952	1-399599	1-400247	1-400894	1-401543	1-402192	1-402842	1-403491	1-404140	78
79	1-405391	1-406038	1-406684	1-407331	1-407978	1-408626	1-409273	1-409921	1-410568	1-411215	79
80	1-411715	1-412360	1-413004	1-413709	1-414374	1-415040	1-415706	1-416373	1-417039	1-417707	80
81	1-418374	1-419043	1-419711	1-420380	1-421049	1-421719	1-422390	1-423059	1-423730	1-424400	81
82	1-423072	1-423744	1-424416	1-425089	1-425761	1-426435	1-427109	1-427782	1-428457	1-429131	82
83	1-431807	1-432483	1-433158	1-433835	1-434511	1-435188	1-435866	1-436545	1-437223	1-437900	83
84	1-438579	1-439259	1-439938	1-440619	1-441299	1-441980	1-442661	1-443342	1-444024	1-444705	84
85	1-445388	1-446071	1-446754	1-447438	1-448121	1-448806	1-449491	1-450175	1-450860	1-451545	85
86	1-452232	1-452919	1-453605	1-454292	1-454980	1-455668	1-456357	1-457045	1-457735	1-458424	86
87	1-459114	1-459803	1-460495	1-461186	1-461877	1-462568	1-463260	1-463953	1-464645	1-465338	87
88	1-466032	1-466726	1-467420	1-468115	1-468810	1-469504	1-470200	1-470896	1-471592	1-472289	88
89	1-472986	1-473684	1-474381	1-475080	1-475779	1-476477	1-477176	1-477876	1-478573	1-479275	89
90	1-479976	1-480680	1-481378	1-482080	1-482782	1-483484	1-484187	1-484890	1-485593	1-486297	90
91	1-487002	1-487707	1-488411	1-489117	1-489823	1-490528	1-491234	1-491941	1-492647	1-493355	91
92	1-494063	1-494771	1-495479	1-496188	1-496897	1-497606	1-498316	1-499026	1-499736	1-500447	92
93	1-501158	1-501870	1-502582	1-503293	1-504006	1-504719	1-505432	1-506146	1-506859	1-507574	93
94	1-508289	1-509004	1-509720	1-510435	1-511151	1-511868	1-512585	1-513303	1-514019	1-514737	94
95	1-515455	1-516174	1-516893	1-517612	1-518332	1-519051	1-519771	1-520492	1-521212	1-521934	95
96	1-522836	1-523578	1-524300	1-525023	1-525746	1-526469	1-527193	1-527916	1-528641	1-529366	96
97	1-530616	1-531342	1-532068	1-532794	1-533521	1-534248	1-534976	1-535704	1-536432	1-537161	97
98	1-537161	1-537889	1-538618	1-539347	1-540076	1-540806	1-541536	1-542267	1-542998	1-543730	98
99	1-544462	1-545194	1-545926	1-546659	1-547392	1-548127	1-548861	1-549595	1-550329	1-551064	99
100	1-551800										100

Table XVI—Brix, Apparent Density, Apparent Specific Gravity, and Grams of Sucrose per 100 ml of Sugar Solutions

(NBS—C440, 1942, p. 632)

Column 1 gives Brix or percentage of sucrose in the solution.

Column 2 gives apparent density, that is, the weight in air with brass weights of 1 ml of solution at 20°C. The values in this column correspond to the values of true density (table XV), having been obtained by means of the formula

$$M = W \left[1 + \frac{\rho}{d_2} \left(\frac{d_2 - d_1}{d_1 - \rho} \right) \right] = W \left(1 + \frac{k}{1000} \right)$$

which may be utilized for converting apparent density into true density, and vice versa, by considering that M , the weight in vacuo, and W , the apparent weight, refer to 1 ml, since true density is defined as the weight in vacuo of 1 ml, and the apparent density as the weight of 1 ml of substance in air with brass weights. ρ is the density of air, which has been taken as 0.0012046, d_1 the density of the solution, d_2 the density of the weights, which has been taken as 8.4 g/ml.

Column 3 gives the apparent specific gravity at 20°C. The values in this column were obtained by dividing the apparent density in column 2 by the apparent density of water at 20°C, which was taken as 0.997174.

Column 4 gives the grams sucrose (weighed in vacuo) per 100 ml of solution.

The values in the table were calculated in three sections by different individuals; thus from 40 to 60 Brix by Peters and Phelps (BS Tech. Paper T338, 1927); 60 to 83.9 Brix by Brewster and Phelps (NBS Research Paper RP536, 1933); and the remaining values 0 to 40 and 84 to 93 Brix by Snyder, Saunders, and Golden of the National Bureau of Standards. After the computations were completed, the tabulations were made by rounding off the values to the last figure given. The values are considered exact to ± 1 in the fifth decimal.

Percentage of sucrose by weight (Brix)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo	Percentage of sucrose by weight (Brix)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo
1	2	3	4	1	2	3	4
0.0	0.99717	1.00000	0.000	2.0	1.00495	1.00780	2.012
.1	.99756	.00039	100	.1	.00534	.00819	.113
.2	.99795	.00078	.200	.2	.00574	.00859	.215
.3	.99834	.00117	.300	.3	.00613	.00898	.317
.4	.99872	.00156	.400	.4	.00652	.00937	.418
.5	.99911	.00194	.500	.5	.00691	.00977	.520
.6	.99950	.00233	.600	.6	.00730	.01016	.622
.7	.99989	.00272	.701	.7	.00769	.01055	.724
.8	1.00028	.00312	.801	.8	.00809	.01094	.826
.9	.00067	.00351	.902	.9	.00848	.01134	.928
1.0	1.00106	1.00390	1.002	3.0	1.00887	1.01173	3.030
.1	.00145	.00429	103	.1	.00927	.01213	.132
.2	.00184	.00468	.203	.2	.00966	.01252	.234
.3	.00223	.00507	.304	.3	.01006	.01292	.337
.4	.00261	.00546	.405	.4	.01045	.01331	.439
.5	.00300	.00585	.506	.5	.01084	.01371	.542
.6	.00339	.00624	.607	.6	.01124	.01410	.644
.7	.00378	.00663	.708	.7	.01163	.01450	.747
.8	.00417	.00702	.809	.8	.01203	.01490	.850
.9	.00456	.00741	.911	.9	.01243	.01529	.953

Table XVI - continued

Percentage of sucrose by weight (Brix)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuum	Percentage of sucrose by weight (Brix)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuum
1	2	3	4	1	2	3	4
4.0	1.01282	1.01569	4.056	9.0	1.03297	1.03590	9.306
-1	-0.1322	-0.1609	-159	-1	-0.3338	-0.3631	-413
-2	-0.1361	-0.1649	-262	-2	-0.3379	-0.3672	-521
-3	-0.1401	-0.1688	-365	-3	-0.3420	-0.3713	-628
-4	-0.1441	-0.1728	-468	-4	-0.3461	-0.3755	-735
-5	-0.1480	-0.1768	-571	-5	-0.3503	-0.3796	-843
-6	-0.1520	-0.1808	-675	-6	-0.3544	-0.3837	-950
-7	-0.1560	-0.1848	-778	-7	-0.3585	-0.3879	-1058
-8	-0.1600	-0.1888	-882	-8	-0.3626	-0.3920	-1166
-9	-0.1640	-0.1928	-986	-9	-0.3667	-0.3961	-1274
5.0	1.01680	1.01968	5.089	10.0	1.03709	1.04003	10.381
-1	-0.1719	-0.2008	-193	-1	-0.3750	-0.4044	-489
-2	-0.1759	-0.2048	-297	-2	-0.3791	-0.4086	-597
-3	-0.1799	-0.2088	-401	-3	-0.3833	-0.4127	-706
-4	-0.1839	-0.2128	-506	-4	-0.3874	-0.4169	-814
-5	-0.1879	-0.2168	-609	-5	-0.3916	-0.4210	-922
-6	-0.1919	-0.2208	-713	-6	-0.3957	-0.4252	-1031
-7	-0.1959	-0.2248	-818	-7	-0.3999	-0.4293	-1139
-8	-0.1999	-0.2288	-922	-8	-0.4040	-0.4335	-1248
-9	-0.2040	-0.2329	-1027	-9	-0.4082	-0.4377	-1356
6.0	1.02080	1.02369	6.131	11.0	1.04123	1.04418	11.465
-1	-0.2120	-0.2409	-236	-1	-0.4165	-0.4460	-574
-2	-0.2160	-0.2450	-340	-2	-0.4207	-0.4502	-683
-3	-0.2200	-0.2490	-445	-3	-0.4248	-0.4544	-792
-4	-0.2241	-0.2530	-550	-4	-0.4290	-0.4585	-901
-5	-0.2281	-0.2571	-655	-5	-0.4332	-0.4627	-1010
-6	-0.2321	-0.2611	-760	-6	-0.4373	-0.4669	-1120
-7	-0.2362	-0.2652	-865	-7	-0.4415	-0.4711	-1229
-8	-0.2402	-0.2692	-971	-8	-0.4457	-0.4753	-1338
-9	-0.2442	-0.2733	-1076	-9	-0.4499	-0.4795	-1448
7.0	1.02483	1.02773	7.181	12.0	1.04541	1.04837	12.558
-1	-0.2523	-0.2814	-287	-1	-0.4583	-0.4879	-667
-2	-0.2564	-0.2854	-392	-2	-0.4625	-0.4921	-777
-3	-0.2604	-0.2895	-498	-3	-0.4667	-0.4963	-887
-4	-0.2645	-0.2936	-604	-4	-0.4709	-0.5005	-997
-5	-0.2685	-0.2976	-709	-5	-0.4750	-0.5047	-1107
-6	-0.2726	-0.3017	-815	-6	-0.4793	-0.5090	-1217
-7	-0.2766	-0.3058	-921	-7	-0.4835	-0.5132	-1327
-8	-0.2807	-0.3098	-1027	-8	-0.4877	-0.5174	-1438
-9	-0.2848	-0.3139	-1133	-9	-0.4919	-0.5216	-1548
8.0	1.02888	1.03180	8.240	13.0	1.04961	1.05259	13.659
-1	-0.2929	-0.3221	-346	-1	-0.5003	-0.5301	-769
-2	-0.2970	-0.3262	-452	-2	-0.5046	-0.5343	-880
-3	-0.3011	-0.3303	-559	-3	-0.5088	-0.5386	-991
-4	-0.3052	-0.3344	-665	-4	-0.5130	-0.5428	-1102
-5	-0.3093	-0.3385	-772	-5	-0.5172	-0.5470	-1213
-6	-0.3133	-0.3426	-879	-6	-0.5215	-0.5513	-1324
-7	-0.3174	-0.3467	-985	-7	-0.5257	-0.5556	-1435
-8	-0.3215	-0.3508	-1092	-8	-0.5300	-0.5598	-1546
-9	-0.3256	-0.3549	-1199	-9	-0.5342	-0.5641	-1657

Table XVI - continued

Percentage of sucrose by weight (bars)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo	Percentage of sucrose by weight (bars)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo
1	2	3	4	1	2	3	4
14.0	1.05385	1.05683	14.769	19.0	1.07549	1.07853	20.454
-1	-05427	-05726	-880	-1	-07593	-07898	-570
-2	-05470	-05769	-992	-2	-07637	-07942	-686
-3	-05512	-05811	-15103	-3	-07681	-07986	-803
-4	-05555	-05854	-215	-4	-07725	1.08030	-919
-5	-05598	-05897	-327	-5	-07769	-08075	21.036
-6	-05640	-05940	-439	-6	-07814	-08119	-152
-7	-05683	-05982	-551	-7	-07858	-08164	-269
-8	-05726	1.06025	-663	-8	-07902	-08208	-385
-9	-05768	-06068	-775	-9	-07947	-08252	-502
15.0	1.05811	1.06111	15.887	20.0	1.07991	1.08297	21.619
-1	-05854	-06154	16.000	-1	1.08035	-08342	-736
-2	-05897	-06197	-112	-2	-08080	-08386	-853
-3	-05940	-06240	-225	-3	-08124	-08431	-971
-4	-05983	-06283	-338	-4	-08169	-08475	22.088
-5	1.06026	-06326	-450	-5	-08213	-08520	205
-6	-06069	-06369	-563	-6	-08258	-08565	-323
-7	-06112	-06412	-676	-7	-08302	-08609	-440
-8	-06155	-06455	-789	-8	-08347	-08654	-558
-9	-06198	-06499	-902	-9	-08392	-08699	-676
16.0	1.06241	1.06542	17.015	21.0	1.08436	1.08744	22.794
-1	-06284	-06585	-129	-1	-08481	-08789	-912
-2	-06327	-06629	-242	-2	-08526	-08834	23.030
-3	-06370	-06672	-356	-3	-08571	-08879	-148
-4	-06414	-06715	-469	-4	-08616	-08923	-266
-5	-06457	-06759	-583	-5	-08660	-08968	-385
-6	-06500	-06802	-697	-6	-08705	1.09013	-503
-7	-06544	-06845	-810	-7	-08750	-09058	-622
-8	-06587	-06889	-924	-8	-08795	-09103	-740
-9	-06630	-06933	18.038	-9	-08840	-09149	-859
17.0	1.06674	1.06976	18.152	22.0	1.08885	1.09194	23.978
-1	-06717	1.07020	-267	-1	-08930	-09239	24.097
-2	-06761	-07063	-381	-2	-08975	-09284	-216
-3	-06804	-07107	-495	-3	1.09020	-09329	-335
-4	-06848	-07151	-610	-4	-09066	-09375	-454
-5	-06891	-07194	-724	-5	-09111	-09420	-573
-6	-06935	-07238	-839	-6	-09156	-09465	-693
-7	-06978	-07282	-954	-7	-09201	-09511	-812
-8	1.07022	-07325	19.069	-8	-09247	-09556	932
-9	-07066	-07369	-184	-9	-09292	-09602	25.052
18.0	1.07110	1.07413	19.299	23.0	1.09337	1.09647	25.172
-1	-07153	-07457	-414	-1	-09383	-09693	-292
-2	-07197	-07501	-529	-2	-09428	-09738	-412
-3	-07241	-07545	-644	-3	-09473	-09784	-532
-4	-07285	-07589	-760	-4	-09519	-09829	-652
-5	-07329	-07633	-875	-5	-09564	-09875	-772
-6	-07373	-07677	-991	-6	-09610	-09921	-893
-7	-07417	-07721	20.107	-7	-09656	1.09966	26.013
-8	-07461	-07765	-222	-8	-09701	1.10012	-134
-9	-07505	-07809	-338	-9	-09747	-10058	-255

Table XVI - continued

Percentage of anesthetic by weight (fluo.)	Apparent density at 26 °C	Apparent specific gravity at 26 °C/26 °C	Gravimetric percentage per 100 ml weight in vacuum	Percentage of anesthetic by weight (fluo.)	Apparent density at 26 °C	Apparent specific gravity at 26 °C/26 °C	Gravimetric percentage per 100 ml weight in vacuum
1	2	3	4	1	2	3	4
24.0	1 09792	1 10104	26.375	29.0	1 12119	1 12436	32.545
1	-09838	10149	-496	1	12166	12484	671
2	09884	10195	-617	2	12214	12532	797
3	09930	10241	738	3	12261	12579	923
4	09976	10287	860	4	12308	12627	33.049
5	1 10021	10333	981	5	12356	12674	176
6	10067	10379	27.102	6	12404	12722	302
7	10113	10425	224	7	12451	12770	-429
8	10159	10471	345	8	12499	12817	556
9	10205	10517	467	9	12546	12865	683
25.0	1 10251	1 10564	27.589	30.0	1 12594	1 12913	33.810
1	10297	10610	710	1	12642	12961	937
2	10343	10656	833	2	12690	1 13009	34.064
3	10389	10702	955	3	12737	13057	191
4	10435	10748	28.077	4	12785	13105	318
5	10482	10795	199	5	12833	13153	446
6	10528	10841	322	6	12881	13201	574
7	10574	10887	444	7	12929	13249	701
8	10620	10934	567	8	12977	13297	829
9	10667	10980	690	9	1 13025	13345	957
26.0	1 10713	1 11027	28.813	31.0	1 13073	1 13394	35.085
1	10759	11073	935	1	13121	13442	213
2	10806	11120	29.059	2	13169	13490	341
3	10852	11166	182	3	13217	13538	470
4	10899	11213	305	4	13266	13587	598
5	10945	11260	428	5	13314	13635	727
6	10992	11306	552	6	13362	13683	855
7	1 11038	11353	675	7	13410	13732	984
8	11085	11400	799	8	13459	13780	36.113
9	11131	11447	923	9	13507	13829	242
27.0	1 11178	1 11493	30.046	32.0	1 13555	1 13877	36.371
1	11225	11540	170	1	13604	13926	500
2	11272	11587	294	2	13652	13974	630
3	11318	11634	418	3	13701	1 14023	759
4	11365	11681	543	4	13749	14072	889
5	11412	11728	667	5	13798	14120	37.018
6	11459	11775	792	6	13846	14169	148
7	11506	11822	916	7	13895	14218	278
8	11553	11869	31.041	8	13944	14267	408
9	11600	11916	165	9	13992	14316	538
28.0	1 11647	1 11963	31.290	33.0	1 14041	1 14364	37.668
1	11694	1 12010	415	1	14090	14413	798
2	11741	12058	540	2	14139	14462	929
3	11788	12105	666	3	14188	14511	38.059
4	11835	12152	791	4	14236	14560	190
5	11882	12199	916	5	14285	14609	320
6	11929	12247	32.042	6	14334	14658	451
7	11977	12294	167	7	14383	14708	582
8	1 12024	12341	293	8	14432	14757	713
9	12071	12389	419	9	14481	14806	844

Table XVI—continued

	Apparent density at 20°C.	Apparent density at 20°C/20°C	Creosote per 100 ml weight in water	Percentage of creosote by weight (Rel.)	Apparent density at 20°C.	Apparent density at 20°C/20°C	Creosote per 100 ml weight in water
1	2	3	4	1	2	3	4
34-0	1 14830	1 14835	38 976	39-0	1 17030	1 17362	45-682
1	14881	14904	39 107	1	17081	17413	819
2	14629	14954	239	2	17132	17464	956
3	14678	1 15003	370	3	17183	17515	46 094
4	14727	15052	502	4	17234	17566	231
5	14776	15102	634	5	17285	17618	369
6	14826	15151	767	6	17336	17669	506
7	14875	15201	898	7	17387	17720	644
8	14925	15250	40-030	8	17439	17772	782
9	14974	15300	162	9	17490	17823	920
35 0	1 15024	1 15350	40 295	40-0	1 17541	1 17874	47 058
1	15073	15399	427	40 1	593	926	196
2	15123	15449	560	40-2	644	1 17977	334
3	15172	15498	692	40 3	695	1 18029	473
4	15222	15548	825	40 4	747	080	611
5	15271	15598	958	40 5	1 17798	1 18132	750
6	15321	15648	41 091	40 6	849	183	47 889
7	15371	15698	224	40-7	901	235	48 028
8	15420	15747	358	40 8	1 17953	287	167
9	15470	15797	491	40 9	1 18004	339	306
36-0	1 15520	1 15847	41 625	41 0	1 18056	1 18390	48 445
1	15570	15897	758	41 1	107	442	585
2	15620	15947	892	41 2	159	494	724
3	15669	15997	42 026	41 3	211	546	864
4	15719	1 16047	160	41 4	263	598	49 004
5	15769	16098	294	41 5	1 18314	1 18650	143
6	15819	16148	428	41 6	356	702	283
7	15869	16198	562	41 7	418	754	424
8	15919	16248	697	41 8	470	806	564
9	15970	16298	831	41 9	522	858	704
37 0	1 16020	1 16349	42 966	42 0	1 18574	1 18910	49 845
1	16070	16399	43 100	42 1	626	1 18962	49 985
2	16120	16449	235	42 2	678	1 19014	50 126
3	16170	16500	370	42 3	730	062	267
4	16221	16550	505	42 4	782	119	50-408
5	16271	16601	641	42 5	1 18835	1 19171	549
6	16321	16651	776	42 6	887	224	690
7	16372	16702	911	42 7	939	276	831
8	16422	16752	44 047	42 8	991	329	50 973
9	16473	16803	182	42 9	1 19044	381	51 114
38 0	1 16523	1 16853	44 318	43 0	1 19096	1 19434	51 256
1	16574	16904	454	43 1	148	486	398
2	16624	16955	590	43 2	201	539	539
3	16675	1 17006	726	43 3	253	591	681
4	16726	17056	862	43 4	306	644	824
5	16776	17107	999	43 5	1 19358	1 19697	51 966
6	16827	17158	45 135	43 6	411	749	52 108
7	16878	17209	272	43 7	483	802	251
8	16929	17260	408	43 8	516	855	393
9	16979	17311	545	43 9	569	908	536

Table XVI - continued

Percentage of sucrose by weight (D ₂₀)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Creases of sucrose per 100 ml. weight at 20°C	Percentage of sucrose by weight (D ₂₀)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Creases of sucrose per 100 ml. weight at 20°C
1	2	3	4	1	2	3	4
44 0	1 19622	1 19961	52 679	49 0	1 22306	1 22652	59 880
44 4	674	1 20013	822	49 1	360	707	60 129
44 2	727	066	52 965	49 2	415	762	279
44 3	780	119	53 108	49 3	470	817	428
44 4	833	172	252	49 4	525	872	578
44 5	1 19886	1 20226	395	49 5	1 22580	1 22927	728
44 6	939	279	539	49 6	634	1 22982	60 878
44 7	992	332	683	49 7	689	1 23037	61 028
44 8	1 20045	385	826	49 8	744	092	178
44 9	098	438	53 970	49 9	799	147	61 328
45 0	1 20151	1 20491	54 114	50 0	1 22854	1 23202	61 478
45 1	204	545	259	50 1	909	1 23257	629
45 2	257	598	403	50 2	1 22964	313	780
45 3	311	651	547	50 3	1 23019	368	930
45 4	364	705	692	50 4	074	423	62 081
45 5	1 20417	1 20758	837	50 5	1 23130	1 23478	232
45 6	470	812	54 981	50 6	185	534	383
45 7	524	865	55 126	50 7	240	589	535
45 8	577	919	272	50 8	295	645	686
45 9	630	1 20972	417	50 9	351	700	838
46 0	1 20684	1 21026	55 562	51 0	1 23406	1 23756	62 989
46 1	737	080	708	51 1	461	811	63 141
46 2	791	133	853	51 2	517	867	293
46 3	845	187	55 999	51 3	572	922	445
46 4	898	241	56 145	51 4	628	1 23978	597
46 5	1 20952	1 21295	291	51 5	1 23683	1 24034	750
46 6	1 21006	349	437	51 6	739	089	902
46 7	059	402	583	51 7	794	145	64 055
46 8	113	456	729	51 8	850	201	208
46 9	167	510	56 876	51 9	906	257	360
47 0	1 21221	1 21564	57 022	52 0	1 23962	1 24313	64 513
47 1	275	618	169	52 1	1 24017	369	666
47 2	329	673	316	52 2	073	425	820
47 3	383	727	463	52 3	129	481	973
47 4	437	781	57 610	52 4	185	537	65 127
47 5	1 21491	1 21835	57 757	52 5	1 24241	1 24593	65 280
47 6	545	889	57 904	52 6	297	649	433
47 7	599	943	58 052	52 7	353	705	588
47 8	653	1 21998	199	52 8	409	761	742
47 9	707	1 22052	347	52 9	465	818	896
48 0	1 21761	1 22106	58 495	53 0	1 24521	1 24874	66 050
48 1	816	161	643	53 1	577	930	205
48 2	870	215	791	53 2	633	987	359
48 3	924	270	58 939	53 3	690	1 25043	514
48 4	979	324	59 087	53 4	746	099	669
48 5	1 22033	1 22379	236	53 5	1 24802	1 25156	824
48 6	088	434	385	53 6	858	212	979
48 7	142	488	533	53 7	915	269	67 134
48 8	197	543	682	53 8	971	325	290
48 9	251	598	831	53 9	1 25028	382	445

Table XVI - continued

Percentage of nitrogen by weight (dry)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of nitrogen per 100 ml weight in vacuum	Percentage of nitrogen by weight (dry)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of nitrogen per 100 ml weight in vacuum
1	2	3	4	1	2	3	4
54 0	1 25084	1 25439	67 601	59 0	1 27958	1 28320	75 555
54 1	141	495	757	59 1	1 28017	379	718
54 2	197	552	912	59 2	075	437	880
54 3	254	609	68 069	59 3	134	497	76 043
54 4	311	666	225	59 4	193	556	207
54 5	1 25367	1 25723	381	59 5	251	614	369
54 6	424	780	537	59 6	309	672	533
54 7	481	836	694	59 7	367	731	696
54 8	538	893	851	59 8	426	789	860
54 9	594	950	69 008	59 9	485	849	77 024
55 0	1 25651	1 26007	69 164	60 0	1 28544	1 28908	77 188
55 1	708	064	322	60 1	602	966	351
55 2	765	122	479	60 2	661	1 29025	515
55 3	822	179	636	60 3	720	084	680
55 4	879	236	794	60 4	779	143	844
55 5	1 25936	1 26293	69 951	60 5	838	203	78 009
55 6	1 25993	350	70 109	60 6	897	262	173
55 7	1 26050	408	267	60 7	956	321	338
55 8	108	465	425	60 8	1 29015	380	503
55 9	165	522	583	60 9	074	439	668
56 0	1 26222	1 26580	70 742	61 0	1 29133	1 29498	78 833
56 1	279	637	70 900	61 1	193	559	999
56 2	337	695	71 059	61 2	252	618	79 165
56 3	394	752	217	61 3	311	677	330
56 4	452	810	376	61 4	370	736	496
56 5	1 26509	1 26868	535	61 5	430	796	662
56 6	566	925	694	61 6	489	855	828
56 7	624	1 26983	71 854	61 7	548	915	995
56 8	682	1 27041	72 013	61 8	608	975	80 161
56 9	739	098	173	61 9	667	1 30034	328
57 0	1 26797	1 27156	72 332	62 0	1 29726	1 30093	80 494
57 1	854	214	492	62 1	786	153	661
57 2	912	272	652	62 2	845	212	828
57 3	970	330	812	62 3	905	273	995
57 4	1 27028	388	72 973	62 4	966	334	81 162
57 5	1 27086	1 27446	73 133	62 5	1 30025	393	329
57 6	143	504	293	62 6	085	453	497
57 7	201	562	454	62 7	145	513	665
57 8	259	620	615	62 8	205	573	833
57 9	317	678	776	62 9	265	633	82 001
58 0	1 27375	1 27736	73 937	63 0	1 30325	1 30694	82 169
58 1	433	794	74 098	63 1	385	754	337
58 2	492	853	260	63 2	446	815	506
58 3	550	911	421	63 3	506	875	674
58 4	608	1 27969	583	63 4	566	936	843
58 5	1 27664	1 28028	744	63 5	626	994	83 012
58 6	724	086	74 906	63 6	686	1 31055	180
58 7	782	145	75 068	63 7	747	117	330
58 8	841	203	230	63 8	807	177	519
58 9	899	262	393	63 9	867	237	688

Table XVI—continued

Percentage of sucrose by weight (bars)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo	Percentage of sucrose by weight (bars)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight at vacuo
1	2	3	4	1	2	3	4
64.0	1.30927	1.31297	83.858	69.0	1.33992	1.34371	92.524
64.1	988	359	84.028	69.1	1.34054	433	701
64.2	1.31048	418	198	69.2	116	495	878
64.3	108	479	367	69.3	179	558	93.056
64.4	169	540	538	69.4	241	621	233
64.5	229	600	708	69.5	304	684	411
64.6	290	661	879	69.6	366	746	589
64.7	350	723	85.049	69.7	429	809	767
64.8	412	784	220	69.8	491	871	945
64.9	473	845	391	69.9	554	934	94.123
65.0	1.31533	1.31905	85.561	70.0	1.34616	1.34997	94.302
65.1	594	966	733	70.1	679	1.35060	481
65.2	655	1.32028	904	70.2	742	123	660
65.3	716	089	86.076	70.3	805	186	839
65.4	777	150	248	70.4	867	248	95.017
65.5	837	210	419	70.5	930	311	197
65.6	898	271	591	70.6	993	375	376
65.7	959	332	763	70.7	1.35056	438	556
65.8	1.32019	393	935	70.8	119	501	736
65.9	081	455	87.107	70.9	182	564	916
66.0	1.32142	1.32516	87.280	71.0	1.35245	1.35627	96.096
66.1	203	577	453	71.1	308	691	276
66.2	264	638	626	71.2	371	754	456
66.3	325	699	798	71.3	434	817	636
66.4	385	759	971	71.4	498	881	817
66.5	446	820	88.142	71.5	561	944	998
66.6	509	884	318	71.6	625	1.36008	97.179
66.7	570	945	492	71.7	688	072	360
66.8	632	1.33007	666	71.8	751	135	541
66.9	693	068	839	71.9	814	198	722
67.0	1.32754	1.33129	89.012	72.0	1.35877	1.36261	97.904
67.1	816	192	187	72.1	940	324	98.085
67.2	878	254	361	72.2	1.36004	389	268
67.3	939	315	536	72.3	067	452	449
67.4	1.33001	377	711	72.4	131	516	632
67.5	062	438	885	72.5	194	579	814
67.6	124	500	90.060	72.6	258	643	997
67.7	186	562	235	72.7	322	707	99.179
67.8	248	625	411	72.8	385	771	362
67.9	309	686	585	72.9	450	836	545
68.0	1.33371	1.33748	90.761	73.0	1.36514	1.36900	99.728
68.1	433	810	937	73.1	578	964	412
68.2	495	872	91.112	73.2	642	1.37028	100.095
68.3	557	935	288	73.3	705	692	278
68.4	619	997	464	73.4	769	156	462
68.5	681	1.34059	641	73.5	833	220	646
68.6	743	121	817	73.6	896	283	827
68.7	805	183	993	73.7	960	347	101.014
68.8	867	245	92.169	73.8	1.37024	411	198
68.9	930	309	347	73.9	088	476	383

Table XVI—continued

Percentage of sucrose by weight (Brix)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo	Percentage of sucrose by weight (Brix)	Apparent density at 20°C	Apparent specific gravity at 20°C/20°C	Grams of sucrose per 100 ml weight in vacuo
1	2	3	4	1	2	3	4
74.0	1.37153	1.37541	101.568	79.0	1.40409	1.40806	111.002
74.1	217	605	753	79.1	475	872	195
74.2	281	669	937	79.2	541	938	388
74.3	345	733	102.122	79.3	607	1.41005	581
74.4	410	798	308	79.4	674	072	775
74.5	475	864	493	79.5	740	138	968
74.6	539	928	679	79.6	806	204	112.161
74.7	604	993	865	79.7	872	270	354
74.8	668	1.38057	103.050	79.8	939	337	549
74.9	733	122	237	79.9	1.41005	404	743
75.0	1.37797	1.38187	103.423	80.0	1.41072	1.41471	112.938
75.1	862	252	609	80.1	138	537	113.131
75.2	926	316	796	80.2	204	603	326
75.3	991	381	983	80.3	271	670	521
75.4	1.38055	445	104.170	80.4	337	737	715
75.5	119	1.38510	104.356	80.5	404	804	911
75.6	184	575	543	80.6	472	872	114.106
75.7	249	640	731	80.7	537	937	301
75.8	314	705	919	80.8	604	1.42004	497
75.9	379	770	105.106	80.9	671	072	692
76.0	1.38444	1.38835	105.294	81.0	1.41737	1.42138	114.888
76.1	510	902	482	81.1	804	205	115.084
76.2	575	967	670	81.2	871	272	280
76.3	640	1.39032	859	81.3	938	339	477
76.4	705	097	106.047	81.4	1.42005	406	673
76.5	770	162	236	81.5	072	474	870
76.6	835	228	424	81.6	139	541	116.067
76.7	900	293	613	81.7	206	608	264
76.8	965	358	802	81.8	273	675	461
76.9	1.39030	423	991	81.9	340	742	658
77.0	1.39096	1.39489	107.181	82.0	1.42407	1.42810	116.856
77.1	161	554	370	82.1	475	878	117.053
77.2	225	619	560	82.2	543	946	252
77.3	291	685	750	82.3	610	1.43013	449
77.4	356	750	940	82.4	677	080	647
77.5	422	816	108.130	82.5	744	148	845
77.6	488	882	320	82.6	811	214	118.044
77.7	554	949	511	82.7	878	282	243
77.8	619	1.40014	701	82.8	946	350	442
77.9	685	080	892	82.9	1.43013	417	641
78.0	1.39751	1.40146	109.084	83.0	1.43081	1.43486	118.840
78.1	816	211	274	83.1	148	553	119.039
78.2	882	277	466	83.2	216	621	239
78.3	948	344	657	83.3	283	688	438
78.4	1.40013	409	848	83.4	351	756	638
78.5	079	475	110.041	83.5	419	824	838
78.6	145	541	232	83.6	488	894	120.039
78.7	211	607	425	83.7	555	961	238
78.8	277	674	617	83.8	623	1.44029	439
78.9	343	740	809	83.9	691	097	640

Table XVI—continued

Percentage of moisture by weight (Dumas)	Apparent density at 28°C	Apparent specific gravity at 28°C/28°C	Grains of sucrose per 100 ml weight at vacuum	Percentage of moisture by weight (Dumas)	Apparent density at 28°C	Apparent specific gravity at 28°C/28°C	Grains of sucrose per 100 ml weight at vacuum
1	2	3	4	1	2	3	4
84 0	1 43758	1 44165	120 841	89 0	1 47199	1 47616	131 096
1	43826	44234	121 042	1	47269	47686	305
2	43894	44302	243	2	47339	47756	515
3	43962	44370	444	3	47409	47826	725
4	1 44030	44438	646	4	47479	47897	935
5	44098	44507	847	5	47548	47967	132 145
6	44166	44575	122 049	6	47618	1 48037	355
7	44234	44643	251	7	47688	48107	565
8	44303	44712	453	8	47758	48177	776
9	44371	44780	655	9	47828	48247	987
85 0	1 44439	1 44848	122 858	90 0	1 47898	1 48317	133 198
1	44507	44917	123 061	1	47968	48388	409
2	44576	44985	263	2	1 48039	48458	620
3	44644	1 45054	466	3	48109	48529	832
4	44712	45123	670	4	48179	48599	134 043
5	44781	45191	873	5	48249	48669	255
6	44849	45260	124 076	6	48320	48740	467
7	44918	45329	280	7	48390	48810	680
8	44986	45397	484	8	48460	48881	892
9	1 45055	45466	688	9	48531	48951	135 104
86 0	1 45124	1 45535	124 892	91 0	1 48601	1 49022	135 317
1	45192	45604	125 096	1	48672	49093	530
2	45261	45673	301	2	48742	49164	743
3	45330	45741	505	3	48813	49234	956
4	45398	45810	710	4	48883	49305	136 170
5	45467	45879	915	5	48954	49376	383
6	45536	45949	126 121	6	1 49024	49447	597
7	45605	1 46018	326	7	49095	49518	811
8	45674	46087	531	8	49166	49588	137 025
9	45743	46156	737	9	49236	49659	239
87 0	1 45812	1 46225	126 943	92 0	1 49307	1 49730	137 454
1	45881	46294	127 149	1	49378	49801	668
2	45950	46364	355	2	49449	49872	883
3	1 46019	46433	562	3	49520	49944	138 098
4	46088	46502	768	4	49591	1 50015	313
5	46157	46572	975	5	49662	50086	529
6	46227	46641	128 182	6	49733	50157	744
7	46296	46710	389	7	49804	50228	960
8	46365	46780	596	8	49875	50299	139 176
9	46434	46849	803	9	49946	50371	392
88 0	1 46504	1 46919	129 011	93 0	1 50017	1 50442	139 608
1	46573	46989	219	1	50088	50513	824
2	46643	1 47058	426	2	50159	50585	140 041
3	46712	47128	635	3	50230	50656	257
4	46782	47198	843	4	50302	50728	474
5	46851	47267	130 051	5	50373	50799	691
6	46921	47337	260	6	50444	50871	908
7	46990	47407	468	7	50516	50942	141 126
8	1 47060	47477	677	8	50587	1 51014	343
9	47130	47547	886	9	50659	51086	561

Table XVII—Mass per Unit Volume of Sugar Solutions at 20°C

Brix	Mass in air kg/m ³	Brix	Mass in air kg/m ³	Brix	Mass in air kg/m ³
0	997.17	35	1150.24	70	1346.16
1	1001.06	36	1155.50	71	1352.45
2	1004.95	37	1160.20	72	1358.77
3	1008.87	38	1165.23	73	1365.14
4	1012.82	39	1170.30	74	1371.53
5	1016.80	40	1175.41	75	1377.97
6	1020.80	41	1180.56	76	1384.44
7	1024.83	42	1185.74	77	1390.96
8	1028.88	43	1190.96	78	1397.51
9	1032.97	44	1196.22	79	1404.09
10	1037.09	45	1201.51	80	1410.72
11	1041.23	46	1206.84	81	1417.37
12	1045.41	47	1212.21	82	1424.07
13	1049.61	48	1217.61	83	1430.81
14	1053.85	49	1223.06	84	1437.58
15	1058.11	50	1228.54	85	1444.39
16	1062.41	51	1234.06	86	1451.24
17	1066.74	52	1239.62	87	1458.12
18	1071.10	53	1245.21	88	1465.04
19	1075.49	54	1250.84	89	1471.99
20	1079.91	55	1256.51	90	1478.98
21	1084.36	56	1262.22	91	1486.01
22	1088.85	57	1267.97	92	1493.07
23	1093.37	58	1273.75	93	1500.17
24	1097.92	59	1279.58	94	1507.29
25	1102.51	60	1285.44	95	1514.48
26	1107.13	61	1291.33	96	—
27	1111.78	62	1297.26	97	—
28	1116.47	63	1303.25	98	—
29	1121.19	64	1309.27	99	—
30	1125.94	65	1315.33	100	—
31	1130.73	66	1321.42		
32	1135.55	67	1327.54		
33	1140.41	68	1333.71		
34	1145.30	69	1339.92		

Table XVIII—Degree of Super-saturation—All Values Being Prefixed by 1

Actual Temp. °C	Saturation temperature °C																																																																																														
	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100																																																																
20	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

Table XIX—Crystal Content of Massedcutes

Mass. purity	Purity drop										
	15	16	17	18	19	20	21	22	23	24	25
98	60.0	61.5	63.0	64.3	65.5	66.7	68.0	69.3	70.6	71.9	73.2
89	57.7	59.3	60.7	62.1	63.3	64.5	65.6	66.7	67.8	68.9	70.0
88	55.6	57.1	58.6	60.0	61.3	62.5	63.6	64.7	65.8	66.9	68.0
87	53.6	55.2	56.7	58.1	59.4	60.6	61.8	62.9	63.9	65.0	66.1
86	51.7	53.3	54.8	56.3	57.6	58.8	60.0	61.1	62.1	63.2	64.2
85	50.0	51.6	53.1	54.5	55.9	57.1	58.3	59.4	60.5	61.5	62.5
84	48.4	50.0	51.5	52.9	54.3	55.6	56.8	57.9	59.0	60.0	61.0
83	46.9	48.5	50.0	51.4	52.8	54.1	55.3	56.4	57.5	58.5	59.5
82	45.5	47.1	48.6	50.0	51.4	52.6	53.8	55.0	56.1	57.1	58.1
81	44.1	45.8	47.2	48.6	50.0	51.3	52.5	53.7	54.8	55.8	56.8
80	42.9	44.4	45.9	47.4	48.7	50.0	51.2	52.4	53.5	54.5	55.6
79	41.7	43.2	44.7	46.2	47.5	48.8	50.0	51.2	52.3	53.3	54.3
78	40.5	42.1	43.6	45.0	46.3	47.6	48.8	50.0	51.1	52.2	53.2
77	39.5	41.0	42.5	43.9	45.2	46.5	47.7	48.9	50.0	51.1	52.1
76	38.5	40.0	41.5	42.9	44.2	45.5	46.7	47.8	48.9	50.0	51.0
75	37.5	39.0	40.5	41.9	43.2	44.4	45.7	46.8	47.9	49.0	50.0
74	36.6	38.1	39.5	40.9	42.2	43.5	44.7	45.8	46.9	48.0	49.0
73	35.7	37.2	38.6	40.0	41.3	42.6	43.7	44.9	46.0	47.1	48.1
72	34.9	36.4	37.8	39.1	40.4	41.7	42.9	44.0	45.1	46.2	47.2
71	34.1	35.6	37.0	38.3	39.6	40.8	42.0	43.1	44.2	45.3	46.3
70	33.3	34.8	36.2	37.5	38.8	40.0	41.2	42.3	43.4	44.4	45.5

	15	16	17	18	19	20	22	24	26	28	30
69	32.6	34.0	35.4	36.7	38.0	39.2	41.5	43.6	45.6	47.5	49.2
68	31.9	33.3	34.7	36.0	37.3	38.5	40.7	42.9	44.8	46.7	48.4
67	31.2	32.7	34.0	35.3	36.5	37.7	40.0	42.1	44.1	45.9	47.6
66	30.6	32.0	33.3	34.6	35.8	37.0	39.3	41.4	43.3	45.2	46.9
65	30.0	31.4	32.7	34.0	35.2	36.4	38.6	40.7	42.6	44.4	46.2
64	29.4	30.8	32.1	33.3	34.5	35.7	37.9	40.0	41.9	43.8	45.5
63	28.8	30.2	31.5	32.7	33.9	35.1	37.3	39.3	41.3	43.1	44.8
62	28.3	29.6	30.9	32.1	33.3	34.5	36.7	38.7	40.6	42.4	44.1
61	27.8	29.1	30.4	31.6	32.8	33.9	36.1	38.1	40.0	41.8	43.5
60	27.3	28.6	29.8	31.0	32.2	33.3	35.5	37.5	39.4	41.2	42.9
59	26.8	28.1	29.3	30.5	31.7	32.8	34.9	36.9	38.8	40.6	42.3
58	26.3	27.6	28.8	30.0	31.1	32.3	34.4	36.4	38.2	40.0	41.7
57	25.9	27.1	28.3	29.5	30.6	31.7	33.8	35.8	37.7	39.4	41.1
56	25.4	26.7	27.9	29.0	30.2	31.3	33.3	35.3	37.1	38.9	40.5
55	25.0	26.2	27.4	28.6	29.7	30.8	32.8	34.8	36.6	38.3	40.0

* With apparent purities the crystal content per cent Box is derived. The use of true purities gives crystal per cent dry substance. To obtain crystal per cent masseuite multiply by Bnx or dry substance per unit of masseuite

Table XX (a)—Stock Recovery

Total Pol and Recoverable Pol in tonnes per cubic metre of stock, when the apparent purity final molasses is 30.

Brix of Product	Total Pol (T) Recoverable Pol (R)	Apparent Purity of Product									
		45	50	55	60	65	70	75	80	85	90
64	T	-378	-418	-460	-503	-543	-586	-628	-671	-711	-753
	R	-179	-239	-299	-358	-418	-478	-539	-597	-657	-717
66	T	-391	-436	-478	-523	-565	-610	-653	-697	-740	-784
	R	-188	-248	-311	-373	-436	-498	-561	-621	-684	-746
68	T	-407	-454	-498	-543	-588	-635	-679	-724	-771	-816
	R	-194	-259	-324	-389	-454	-519	-583	-648	-713	-776
70	T	-425	-472	-519	-565	-612	-659	-706	-753	-800	-847
	R	-201	-268	-335	-402	-472	-539	-606	-673	-740	-805
72	T	-440	-489	-536	-586	-635	-684	-733	-782	-831	-878
	R	-210	-277	-349	-418	-489	-559	-628	-697	-767	-838
74	T	-456	-507	-557	-608	-659	-708	-760	-811	-860	-912
	R	-217	-291	-362	-434	-507	-579	-653	-724	-796	-869
76	T	-474	-525	-579	-630	-684	-735	-789	-840	-894	-945
	R	-226	-299	-375	-451	-525	-601	-675	-751	-825	-901
78	T	-489	-545	-599	-653	-708	-762	-816	-872	-925	-979
	R	-232	-311	-389	-467	-545	-621	-700	-778	-856	-932
80	T	-507	-563	-619	-677	-733	-789	-845	-901	-959	-1015
	R	-241	-322	-402	-483	-563	-644	-724	-805	-885	-966
82	T	-525	-583	-641	-700	-758	-816	-874	-932	-990	-1050
	R	-250	-333	-416	-501	-583	-666	-749	-834	-916	-999
84	T	-543	-603	-664	-722	-784	-845	-905	-966	-1026	-1086
	R	-259	-344	-431	-516	-603	-688	-776	-860	-948	-1033
86	T	-561	-624	-686	-749	-809	-872	-934	-997	-1059	-1122
	R	-268	-355	-445	-534	-624	-713	-800	-890	-979	-1068
88	T	-579	-644	-708	-773	-836	-901	-966	-1030	-1095	-1158
	R	-275	-369	-460	-552	-644	-735	-827	-919	-1012	-1104
90	T	-599	-664	-731	-798	-865	-930	-997	-1064	-1129	-1196
	R	-284	-380	-474	-570	-664	-760	-854	-950	-1044	-1138
92	T	-617	-686	-755	-822	-892	-961	-1028	-1097	-1167	-1234
	R	-295	-391	-489	-588	-686	-784	-881	-979	-1077	-1176
94	T	-637	-708	-778	-849	-919	-990	-1062	-1131	-1202	-1274
	R	-304	-405	-505	-606	-706	-809	-910	-1010	-1111	-1214
96	T	-657	-729	-802	-876	-948	-1021	-1095	-1167	-1240	-1312
	R	-313	-416	-521	-626	-729	-834	-939	-1042	-1147	-1249
98	T	-677	-751	-827	-903	-977	-1053	-1126	-1202	-1278	-1352
	R	-322	-429	-536	-644	-751	-858	-966	-1073	-1180	-1290
100	T	-697	-773	-852	-930	-1006	-1084	-1162	-1238	-1316	-1395
	R	-333	-443	-552	-664	-773	-885	-995	-1106	-1216	-1328

Table XX (b): Stock Recovery

Total Pol and Recoverable Pol in tonnes per cubic metre of stock, when the apparent purity of final molasses is 35.

Brix of Product	Total Pol(T) Recover. pol (R)	Apparent Purity of Product									
		45	50	55	60	65	70	75	80	85	90
64	T	-378	-418	-460	-503	-543	-586	-628	-671	-711	-753
	R	-130	-192	-257	-322	-387	-451	-514	-579	-644	-708
66	T	-391	-436	-478	-523	-565	-610	-653	-697	-740	-784
	R	-134	-201	-268	-335	-402	-469	-536	-603	-671	-738
68	T	-407	-454	-498	-543	-588	-635	-679	-724	-771	-816
	R	-139	-210	-279	-349	-418	-487	-557	-628	-697	-767
70	T	-425	-472	-519	-565	-612	-659	-706	-753	-800	-847
	R	-145	-217	-291	-362	-434	-507	-579	-650	-724	-796
72	T	-440	-489	-536	-586	-635	-684	-733	-782	-831	-878
	R	-150	-226	-302	-375	-451	-525	-601	-677	-751	-827
74	T	-456	-507	-557	-608	-659	-708	-760	-811	-860	-912
	R	-156	-235	-313	-389	-467	-545	-624	-702	-780	-858
76	T	-474	-525	-579	-630	-684	-735	-789	-840	-894	-945
	R	-161	-241	-324	-405	-485	-565	-646	-726	-809	-890
78	T	-489	-545	-599	-653	-708	-762	-816	-872	-925	-979
	R	-168	-250	-335	-418	-503	-586	-671	-753	-838	-921
80	T	-507	-563	-619	-677	-733	-789	-845	-901	-959	-1015
	R	-172	-259	-346	-434	-521	-606	-693	-780	-867	-954
82	T	-525	-583	-641	-700	-758	-816	-874	-932	-990	-1050
	R	-179	-268	-358	-449	-539	-628	-717	-807	-896	-986
84	T	-543	-603	-664	-722	-784	-845	-905	-966	-1026	-1086
	R	-186	-277	-371	-463	-557	-648	-742	-834	-928	-1019
86	T	-561	-624	-686	-749	-809	-872	-934	-997	-1059	-1122
	R	-192	-288	-387	-478	-574	-671	-767	-863	-959	-1055
88	T	-579	-644	-708	-773	-836	-901	-966	-1030	-1095	-1158
	R	-199	-297	-396	-496	-595	-693	-791	-892	-990	-1088
90	T	-599	-664	-731	-798	-865	-930	-997	-1064	-1129	-1196
	R	-203	-306	-409	-512	-612	-715	-818	-921	-1021	-1124
92	T	-617	-686	-755	-822	-892	-961	-1028	-1097	-1167	-1234
	R	-208	-317	-422	-527	-633	-738	-845	-950	-1055	-1160
94	T	-637	-708	-778	-849	-919	-990	-1062	-1131	-1202	-1274
	R	-219	-326	-436	-543	-653	-760	-869	-979	-1088	-1198
96	T	-657	-729	-802	-876	-948	-1021	-1095	-1167	-1240	-1312
	R	-224	-337	-449	-561	-673	-784	-898	-1010	-1120	-1234
98	T	-677	-751	-827	-903	-977	-1053	-1126	-1202	-1278	-1352
	R	-230	-346	-463	-579	-693	-809	-925	-1042	-1155	-1272
100	T	-697	-773	-852	-930	-1006	-1084	-1162	-1238	-1316	-1395
	R	-239	-358	-476	-595	-715	-834	-952	-1073	-1191	-1310

Table XX (c) Stock Recovery

Total Pol and Recoverable Pol in tonnes per cubic metre of stock when the apparent purity of final molasses is 40

Brix of Product	Total Pol(T) Recover Pol(R)	Apparent Purity of Product									
		45	50	55	60	65	70	75	80	85	90
		64	T R	378 069	418 139	460 210	503 279	543 349	586 373	628 487	671 559	711 628	753 697
66	T R	391 072	-436 145	478 217	523 288	565 362	610 434	653 507	697 579	740 653	784 525
68	T R	407 076	454 152	498 226	543 302	588 378	635 451	679 527	724 603	771 677	816 755
70	T R	425 078	472 156	519 235	565 313	612 391	659 469	706 550	753 626	800 704	847 784
72	T R	440 080	489 163	536 244	586 324	635 407	684 487	733 570	782 650	831 731	878 814
74	T R	456 085	507 170	557 253	608 337	659 422	708 507	760 592	811 675	860 760	912 845
76	T R	474 087	525 174	579 264	630 351	684 438	735 525	789 612	840 702	894 789	945 878
78	T R	489 092	545 181	599 273	653 364	708 454	762 545	816 635	872 726	925 818	979 907
80	T R	507 094	563 188	619 282	677 375	733 469	789 563	845 657	901 751	959 847	1 015 939
82	T R	525 096	583 194	641 291	700 387	758 485	816 581	874 679	932 776	990 876	1 050 972
84	T R	543 101	603 201	662 302	724 402	784 503	845 601	905 704	966 802	1 026 905	1 086 1 006
86	T R	561 103	624 208	686 311	749 416	809 519	872 624	934 726	997 829	1 059 934	1 122 1 039
88	T R	579 107	644 215	708 322	773 429	836 536	901 644	966 751	1 030 858	1 095 966	1 158 1 073
90	T R	599 112	664 221	731 333	798 445	865 554	930 666	997 776	1 064 887	1 129 999	1 196 1 106
92	T R	617 114	686 228	755 342	822 458	892 570	961 686	1 028 800	1 097 912	1 167 1 028	1 234 1 142
94	T R	637 118	708 235	778 353	849 472	919 588	990 706	1 062 825	1 131 941	1 202 1 059	1 274 1 178
96	T R	657 121	729 244	802 364	876 485	948 608	1 021 729	1 095 852	1 167 975	1 240 1 093	1 312 1 216
98	T R	677 125	751 250	827 375	903 501	977 626	1 053 751	1 126 876	1 202 1 004	1 278 1 126	1 352 1 252
100	T R	697 130	773 257	852 387	930 516	1 006 644	1 084 773	1 162 903	1 238 1 033	1 316 1 160	1 395 1 290

Table XXI Factors to be used in calculating mass per cubic metre of molasses

Temperature C	Factor A	Factor B	Temperature C	Factor A	Factor B
10	2 23444	2 23791	25	2 23529	2 24394
11	2 23451	2 23811	26	2 23534	2 24461
12	2 23455	2 23835	27	2 23540	2 24528
13	2 23462	2 23858	28	2 23545	2 24573
14	2 23466	2 23880	29	2 23551	2 24640
15	2 23473	2 23925	30	2 23556	2 24707
16	2 23478	2 23969	31	2 23563	2 24774
17	2 23484	2 24014	32	2 23567	2 24810
18	2 23489	2 24059	33	2 23574	2 24930
19	2 23496	2 24103	34	2 23578	2 24998
20	2 23500	2 24126	35	2 23585	2 25065
21	2 23507	2 24171	36	2 23589	2 25154
22	2 23511	2 24238	37	2 23596	2 25221
23	2 23518	2 24282	38	2 23601	2 25310
24	2 23522	2 24349	39	2 23607	2 25400
			40	2 23612	2 25489

Note This table replaces Table XX of the fifth edition of the Laboratory Manual. When calculating the mass in tonnes using the factors in the above table it is no longer necessary to divide by 100 as stated on page 159 of the Laboratory manual.

Table XIII: Density (g/cm³) of Water at Temperatures from 0 to 102°C
 According to M. Thiesen, Wiss. Abh. der Physikalisch-Technischen Reichsanstalt, 4, No. 1, 1904

Temp. °C	Density	Temp. °C	Density	Temp. °C	Density
0	0.99987	35	0.99406	70	0.97781
1	0.99993	36	0.99371	71	0.97723
2	0.99997	37	0.99336	72	0.97666
3	0.99999	38	0.99299	73	0.97607
4	1.00000	39	0.99262	74	0.97548
5	0.99999	40	0.99225	75	0.97489
6	0.99997	41	0.99186	76	0.97428
7	0.99993	42	0.99147	77	0.97368
8	0.99988	43	0.99107	78	0.97307
9	0.99981	44	0.99066	79	0.97245
10	0.99973	45	0.99024	80	0.97183
11	0.99963	46	0.98982	81	0.97120
12	0.99952	47	0.98940	82	0.97057
13	0.99940	48	0.98896	83	0.96994
14	0.99927	49	0.98852	84	0.96930
15	0.99913	50	0.98807	85	0.96865
16	0.99897	51	0.98762	86	0.96800
17	0.99880	52	0.98715	87	0.96734
18	0.99862	53	0.98669	88	0.96668
19	0.99843	54	0.98621	89	0.96601
20	0.99823	55	0.98573	90	0.96534
21	0.99802	56	0.98524	91	0.96467
22	0.99780	57	0.98478	92	0.96399
23	0.99756	58	0.98425	93	0.96330
24	0.99732	59	0.98375	94	0.96261
25	0.99707	60	0.98324	95	0.96192
26	0.99681	61	0.98272	96	0.96122
27	0.99654	62	0.98220	97	0.96051
28	0.99626	63	0.98167	98	0.95981
29	0.99597	64	0.98113	99	0.95909
30	0.99567	65	0.98059	100	0.95838
31	0.99537	66	0.98005	101	0.95765
32	0.99505	67	0.97950	102	0.95693
33	0.99473	68	0.97894	..	..
34	0.99440	69	0.97838	..	..

Table XXIII: Corrections for temperature (in g) to be added to weight of water contained to obtain volume (in ml) of vessel at 20°C
Nominal Capacity 1,000ml
(For Vessels made of Soda Glass)

Temp. of water t°C	0	1	2	3	4	5	6	7	8	9	Temp. of water t°C
5	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	5
6	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.50	1.50	6
7	1.50	1.50	1.50	1.50	1.51	1.51	1.51	1.52	1.52	1.52	7
8	1.52	1.53	1.53	1.54	1.54	1.54	1.55	1.55	1.56	1.56	8
9	1.57	1.57	1.57	1.58	1.59	1.59	1.60	1.60	1.61	1.61	9
10	1.62	1.63	1.63	1.64	1.64	1.65	1.66	1.67	1.67	1.68	10
11	1.69	1.69	1.70	1.71	1.72	1.73	1.73	1.74	1.75	1.76	11
12	1.77	1.78	1.78	1.79	1.80	1.81	1.82	1.83	1.84	1.85	12
13	1.86	1.87	1.88	1.89	1.90	1.91	1.92	1.93	1.94	1.96	13
14	1.97	1.98	1.99	2.00	2.01	2.02	2.04	2.05	2.06	2.07	14
15	2.08	2.10	2.11	2.12	2.13	2.15	2.16	2.17	2.19	2.20	15
16	2.21	2.23	2.24	2.25	2.27	2.28	2.30	2.31	2.33	2.34	16
17	2.35	2.37	2.38	2.40	2.41	2.43	2.44	2.46	2.48	2.49	17
18	2.51	2.52	2.54	2.55	2.57	2.59	2.60	2.62	2.64	2.65	18
19	2.67	2.69	2.70	2.72	2.74	2.76	2.77	2.79	2.81	2.83	19
20	2.84	2.86	2.88	2.90	2.92	2.94	2.95	2.97	2.99	3.01	20
21	3.03	3.05	3.07	3.09	3.11	3.13	3.14	3.16	3.18	3.20	21
22	3.22	3.24	3.26	3.28	3.30	3.33	3.35	3.37	3.39	3.41	22
23	3.43	3.45	3.47	3.49	3.51	3.54	3.56	3.58	3.60	3.62	23
24	3.64	3.67	3.69	3.71	3.73	3.75	3.78	3.80	3.82	3.85	24
25	3.87	3.89	3.91	3.94	3.96	3.98	4.01	4.03	4.06	4.08	25
26	4.10	4.13	4.15	4.17	4.20	4.22	4.25	4.27	4.30	4.32	26
27	4.35	4.37	4.40	4.42	4.45	4.47	4.50	4.52	4.55	4.57	27
28	4.60	4.62	4.65	4.68	4.70	4.73	4.75	4.78	4.81	4.83	28
29	4.86	4.89	4.91	4.94	4.97	4.99	5.02	5.05	5.08	5.10	29
30	5.13	5.16	5.19	5.21	5.24	5.27	5.30	5.33	5.35	5.38	30
31	5.41	5.44	5.47	5.50	5.52	5.55	5.58	5.61	5.64	5.67	31
32	5.70	5.73	5.76	5.79	5.82	5.85	5.88	5.91	5.94	5.97	32
33	6.00	6.03	6.06	6.09	6.12	6.15	6.18	6.21	6.24	6.27	33
34	6.30	6.33	6.36	6.39	6.42	6.46	6.49	6.52	6.55	6.58	34
35	6.61										35

*From BS 1797 1968

More For vessels of other size the correction to be applied bears the same ratio to those listed as the nominal capacity bears to 1000 ml

Table XXIV—Corrections for Atmospheric Pressure (in g) to be Added to or Subtracted from the Weight of Water Contained to Obtain Volume (in ml) of Vessel at Standard Temperature and Pressure*

Temp. of air °C	Pressure in mm. of mercury at 0 °C													
	730	735	740	745	750	755	760	765	770	775	780	785	790	795
5.	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05	+0.06	+0.07	+0.08	+0.08	+0.09	+0.10	+0.10	+0.10
6.	+0.01	+0.02	+0.03	+0.03	+0.04	+0.05	+0.06	+0.06	+0.07	+0.07	+0.08	+0.09	+0.10	+0.10
7.	+0.01	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05	+0.06	+0.06	+0.07	+0.08	+0.08	+0.09	+0.09
8.		+0.01	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05	+0.06	+0.07	+0.07	+0.08	+0.09	+0.09
9.		+0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.05	+0.05	+0.06	+0.07	+0.08	+0.08	+0.09
10.	-0.01		+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05	+0.06	+0.06	+0.07	+0.08	+0.08
11.	-0.01		+0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.05	+0.05	+0.06	+0.07	+0.08	+0.08
12.	-0.01	-0.01		+0.01	+0.02	+0.02	+0.03	+0.04	+0.05	+0.05	+0.06	+0.07	+0.08	+0.08
13.	-0.02	-0.02	-0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05	+0.06	+0.06	+0.07	+0.07
14.	-0.02	-0.02	-0.02	+0.01	+0.02	+0.02	+0.03	+0.03	+0.04	+0.04	+0.05	+0.06	+0.06	+0.07
15.	-0.02	-0.02	-0.02	-0.01	+0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.05	+0.06	+0.06	+0.07
16.	-0.03	-0.02	-0.02	-0.01	-0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05	+0.06	+0.06
17.	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	+0.01	+0.02	+0.03	+0.03	+0.04	+0.05	+0.05	+0.06
18.	-0.03	-0.03	-0.02	-0.01	-0.01	-0.01	+0.01	+0.02	+0.03	+0.03	+0.04	+0.05	+0.05	+0.06
19.	-0.04	-0.03	-0.02	-0.02	-0.02	-0.02	+0.01	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05	+0.05
20.	-0.04	-0.04	-0.03	-0.02	-0.02	-0.02	+0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.04	+0.05
21.	-0.05	-0.04	-0.03	-0.02	-0.02	-0.02	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
22.	-0.05	-0.04	-0.04	-0.03	-0.03	-0.03	+0.01	+0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.05
23.	-0.05	-0.05	-0.04	-0.03	-0.03	-0.02	+0.01	+0.01	+0.01	+0.02	+0.02	+0.03	+0.04	+0.05
24.	-0.06	-0.05	-0.04	-0.04	-0.03	-0.02	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
25.	-0.06	-0.05	-0.05	-0.04	-0.03	-0.03	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
26.	-0.06	-0.06	-0.05	-0.04	-0.04	-0.04	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
27.	-0.07	-0.06	-0.06	-0.05	-0.04	-0.04	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
28.	-0.07	-0.06	-0.06	-0.05	-0.04	-0.04	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
29.	-0.08	-0.07	-0.06	-0.06	-0.05	-0.04	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
30.	-0.08	-0.07	-0.07	-0.06	-0.05	-0.04	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
31.	-0.08	-0.08	-0.07	-0.06	-0.05	-0.04	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
32.	-0.09	-0.08	-0.07	-0.07	-0.06	-0.05	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
33.	-0.09	-0.08	-0.08	-0.07	-0.06	-0.05	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
34.	-0.09	-0.09	-0.08	-0.07	-0.06	-0.06	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05
35.	-0.10	-0.09	-0.08	-0.08	-0.07	-0.06	+0.01	+0.01	+0.01	+0.02	+0.03	+0.04	+0.04	+0.05

* From B S. 1797 1968
 Note.—For vessels of other size the correction to be applied bears the same ratio to those listed as the nominal capacity bears to 1000 ml.

Table XXV Requirements for Apparatus for Use in the Analysis of Cane for Payment Purposes
When apparatus is used for the analysis of cane for payment purposes it must conform either to a specification from a recognised Standards authority or to the following requirements

Brix Hydrometers

The hydrometer must be of an approved shape, size and construction. The scale shall correspond to one of the following ranges: 0 to 10, 10 to 20, 15 to 25, 20 to 30. It shall be calibrated to read degrees Brix at 20°C and the range shall be divided in intervals of one tenth of one degree with full numbering at each unit graduation mark. The graduation lines shall be fine of uniform thickness and at right angles to the axis of the hydrometer. The scale shall be firmly secured inside the stem and without twist. The readings must conform to a tolerance of $\pm 0.1^\circ$ Brix at any point of the scale. The following inscriptions shall be clearly marked on the scale within the stem and shall not encroach on the scale or numbering:

- The maker's name
- Serial number
- Brix or per cent of sugar by weight
- Temp 20°C

Polarimeter or Saccharimeter tubes

The tube must be straight. The length of the tube at 20°C shall be within ± 0.03 per cent of the nominal lengths of 100 and 200 mm. The ends of the tube must be parallel and ground flat in a plane at right angles to the axis of the tube and no detectable change in reading should be observed on rotating the tube.

Each end must project beyond the ferrule or threaded collar to a distance not exceeding 1 mm, such that a cover glass placed over the end of the tube does not touch any other part of the tube.

Cover glasses

Cover glasses for polarimeter or saccharimeter tubes must be made of clear optical glass and free from strain. They must have plane parallel surfaces free from scratches. The edges should be slightly bevelled to prevent chipping. A thickness of 1.5 to 2 mm is desirable for tubes of 200 mm length.

Polarimeters and Saccharimeters

These must be in a satisfactory condition mechanically and optically. The error at any point of the scale must not exceed ± 0.1 scale degrees. It is recommended that they should be calibrated in terms of the International Sugar Scale corresponding to a normal weight of 26 000 grammes.

Thermometers

Thermometers are to be of mercury in glass, solid stem or of an approved enclosed scale type. All ranges up to a maximum of 110°C to include zero. The maximum error allowed is 1.0°C. Total immersion thermometers are preferred. Inscriptions should include the maker or vendor's name or mark and the immersion for which the thermometer is calibrated.

Refractometers

These must be in satisfactory condition mechanically and optically. The maximum error at any point of the scale should be the equivalent of 0.2 degrees Brix.

Balances

These should be within accepted tolerances for sensitivity and reproducibility corresponding to the maximum capacity of the balance. Efficient damping is required for rapid weighing.

Weights

Weights to 100g should conform to Class B tolerances as specified by the National Standards Laboratory Australia.

Weights of nominal values from 10% to 1kg should conform to tolerances of 15 parts in

Table XXV - continued

The tolerances shown in this Table have been compiled from specifications issued by the British Standards Institution. They are recommended as being suitable for apparatus for general use.

Flasks—One mark volumetric

Nominal capacity ml	5	10	25	50	100	200	250	500	1000	2000
Tolerance \pm ml	0.04	0.04	0.06	0.10	0.15	0.30	0.30	0.50	0.80	1.20

(British Standard 1792 1960 endorsed as Australian Standard R 20-1961)

Sugar Flasks

Type 1—Two graduation marks

Type 2—Single graduation mark for polarization of sugars

Nominal capacity ml	Type 1			Type 2
	50/55	100/110	200/220	100
Tolerance \pm ml	0.1	0.15	0.25	0.03

(British Standard 675 1953)

Nominal capacity ml	Subdivision ml	Tolerance on capacity \pm ml	Delivery times	
			min	max
1	0.01	0.01	20	50
2	0.02	0.02	20	50
5	0.02	0.02	50	120
5	0.05	0.04	20	50
10	0.02	0.02	100	200
10	0.1	0.05	15	40
25	0.05	0.05	85	170
25	0.1	0.1	35	70
50	0.1	0.1	75	150
100	0.2	0.2	65	130

(British Standard 846 1962 endorsed as Australian Standard R 10-1964)

Pipettes—One mark bulb

Nominal capacity ml	1	2	5	10	15	20	25	50	100
Tolerance \pm ml	0.15	0.2	0.3	0.4	0.5	0.6	0.6	0.8	1.2
Delivery times (seconds)									
minimum	5	5	10	10	15	20	20	20	30
maximum	15	15	25	25	30	40	40	50	60

(British Standard 1583 1961 endorsed as Australian Standard R 16-1962)

Table XXV - continued

Graduated Pipettes

Type 1—*for* delivery from zero mark to graduation marksType 2—*for* delivery down to jet

Nominal capacity ml	1	2	5	10	25
Subdivisions ml	01	02	05	10	10
Tolerance \pm ml	01	02	05	10	20

Delivery times, all sizes

Type 1

Minimum 15 s Maximum 30 s

Type 2

Minimum 10 s Maximum 25 s

(British Standard 700 1962, amendment No 1 published 7/5/1963)

Measuring Cylinders—unstoppered

Nominal capacity ml	5	10	25	50	100	250	500	1000	2000
Tolerance \pm ml	08	15	25	5	8	15	2	4	8

(British Standard 604 1952 endorsed as Australian Standard R 6-1953)

Thermometers—Mercury in glass type

Range °C	British Standard	Graduation interval deg C	Tolerance \pm °C	
			Total immersion	Partial immersion
-5 to +100	593	0.1	0.2	0.4
-20 to +60	593	0.2	0.3	0.4
50 to 110	593	0.2	0.3	0.6
99 to 160	593	0.2	0.4	0.8
130 to 210	593	0.2	0.6	1.2
-5 to +105	1704	0.5	0.5	0.6
-5 to +105	593	1.0	0.3	0.6
-5 to +105	1704	1.0	1.0	1.0
-5 to +230	1704	1.0	1.0	1.0
-5 to +360	1704	1.0	2.0	3.0
95 to 205	593	1.0	0.5	1.0

Metric Weights

Nominal value kg	5	3	2	1
Tolerance \pm mg	250	150	100	50

Non-Mnal vafee g	500	300	200	100	50	30	20	10 to 01	0.05 to 0.001
Tcterancee \pm mg	25	15	10	5	2.5	1.5	1.0	0.5	0.2

For values not tabulated the tolerances are the same as those given for the next larger tabulated value. The tolerances for burettes, graduated pipettes, graduated cylinders, and thermometers apply to the whole of the graduated portion or to any fraction of it.

Table XXVI—Properties of Saturated Steam

Pressure p , kPa		Temp. t , °C	Specific Enthalpy kJ/kg			Specific Volume l/kg	
Absolute p	Gauge		Saturated liquid h_f	Evapora- tion h_{fg}	Saturated vapour h_g	Saturated liquid v_f	Saturated vapour v_g
1.0	100.325	6.983	29.34	2485.0	2514.4	1.0001	129209.0
1.5	99.825	13.036	54.71	2470.7	2525.5	1.0006	87982.2
2.0	99.325	17.513	73.46	2460.2	2533.6	1.0012	67006.1
2.5	98.825	21.096	88.45	2451.7	2540.2	1.0019	54256.2
3.0	98.325	24.100	101.0	2444.6	2545.6	1.0027	45667.3
3.5	97.825	26.694	111.8	2438.5	2550.4	1.0033	39478.7
4.0	97.325	28.983	121.4	2433.1	2554.5	1.0040	34802.2
4.5	96.825	31.035	130.0	2428.2	2558.2	1.0046	31140.8
5.0	96.325	32.898	137.8	2423.8	2561.6	1.0052	28194.3
6.0	95.325	36.183	151.5	2416.0	2567.5	1.0064	23741.0
7.0	94.325	39.025	163.4	2409.2	2572.6	1.0074	20531.0
8.0	93.325	41.534	173.9	2403.2	2577.1	1.0084	18104.6
9.0	92.325	43.787	183.3	2397.9	2581.1	1.0093	16204.3
10	91.325	45.833	191.8	2392.9	2584.8	1.0102	14674.6
12	89.325	49.446	206.9	2384.3	2591.2	1.0118	12361.9
14	87.325	52.574	220.0	2376.7	2596.7	1.0133	10694.2
16	85.325	55.341	231.6	2370.0	2601.6	1.0147	9433.1
18	83.325	57.826	242.0	2363.9	2605.9	1.0160	8445.2
20	81.325	60.086	251.5	2358.4	2609.9	1.0172	7649.8
25	76.325	64.992	272.0	2346.4	2618.3	1.0199	6204.5
30	71.325	69.124	289.3	2336.1	2625.4	1.0223	5229.3
40	61.325	75.886	317.7	2319.2	2636.9	1.0265	3993.4
50	51.325	81.345	340.6	2305.4	2646.0	1.0301	3240.2
60	41.325	85.954	359.9	2293.6	2653.6	1.0333	2731.8
70	31.325	89.959	376.8	2283.3	2660.1	1.0361	2364.7
80	21.325	93.512	391.7	2274.0	2665.8	1.0387	2087.0
90	11.325	96.713	405.2	2265.6	2670.9	1.0411	1869.2
100	1.325	99.632	417.5	2257.9	2675.4	1.0434	1693.7
101.325	0	100.0	418.98	2256.8	2675.6	1.0437	1672.9
110	8.675	102.317	428.8	2250.8	2679.6	1.0455	1549.2
120	18.675	104.808	439.4	2244.1	2683.4	1.0475	1428.1
130	28.675	107.133	449.2	2237.8	2687.0	1.0495	1325.1
140	38.675	109.315	458.4	2231.9	2690.3	1.0513	1236.3
150	48.675	111.372	467.1	2226.2	2693.4	1.0530	1159.0
160	58.675	113.320	475.4	2220.9	2696.2	1.0547	1091.1
170	68.675	115.170	483.2	2215.7	2699.0	1.0563	1030.9
180	78.675	116.933	490.7	2210.8	2701.5	1.0579	977.23
190	88.675	118.617	497.8	2206.1	2704.0	1.0594	929.00
200	98.675	120.231	504.7	2201.6	2706.3	1.0608	885.44
220	118.675	123.270	517.6	2193.0	2710.6	1.0636	809.84
240	138.675	126.091	529.6	2184.9	2714.5	1.0663	746.45
260	158.675	128.727	540.9	2177.3	2718.2	1.0688	692.51
280	178.675	131.203	551.4	2170.1	2721.5	1.0712	646.04
300	198.675	133.540	561.4	2163.2	2724.7	1.0735	605.56
320	218.675	135.753	570.9	2156.7	2727.6	1.0757	569.99
340	238.675	137.858	579.9	2150.4	2730.3	1.0778	538.46
360	258.675	139.865	588.5	2144.4	2732.9	1.0799	510.32
380	278.675	141.784	596.8	2138.6	2735.3	1.0819	485.05
400	298.675	143.623	604.7	2133.0	2737.6	1.0839	462.22
420	318.675	145.390	612.3	2127.5	2739.8	1.0857	441.50
440	338.675	147.090	619.6	2122.3	2741.9	1.0876	422.60
460	358.675	148.729	626.7	2117.2	2743.9	1.0894	405.28
480	378.675	150.313	633.5	2112.2	2745.7	1.0911	389.36
500	398.675	151.844	640.1	2107.4	2747.5	1.0928	374.68
520	418.675	153.327	646.5	2102.7	2749.3	1.0945	361.08
540	438.675	154.765	652.8	2098.1	2750.9	1.0961	348.46
560	458.675	156.161	658.8	2093.7	2752.5	1.0977	336.71
580	478.675	157.518	664.7	2089.3	2754.0	1.0993	325.74
600	498.675	158.838	670.4	2085.0	2755.5	1.1009	315.47

Table XXVI-Continued

Pressure p, kPa		Temp. °C t	Specific Enthalpy kJ/kg			Specific Volume l/kg	
Absolute P	Gauge		Saturated liquid h _f	Evapora- tion h _g	Saturated vapour h _g	Saturated liquid v _f	Saturated vapour v _g
620	518-675	160-123	676-0	2080-9	2756-9	1-1024	305-85
640	538-675	161-376	681-5	2076-8	2758-2	1-1039	296-81
660	558-675	162-598	686-8	2072-7	2759-5	1-1053	288-30
680	578-675	163-791	692-0	2068-8	2760-8	1-1068	280-27
700	598-675	164-956	697-1	2064-9	2762-0	1-1082	272-68
720	618-675	166-095	702-0	2061-1	2763-2	1-1096	265-50
740	638-675	167-209	706-9	2057-4	2764-3	1-1110	258-70
760	658-675	168-300	711-7	2053-7	2765-4	1-1123	252-24
780	678-675	169-368	716-3	2050-1	2766-4	1-1137	246-10
800	698-675	170-415	720-9	2046-5	2767-5	1-1150	240-26
820	718-675	171-441	725-4	2043-0	2768-3	1-1163	234-69
840	738-675	172-448	729-9	2039-6	2769-4	1-1176	229-38
860	758-675	173-436	734-2	2036-2	2770-4	1-1188	224-30
880	778-675	174-405	738-5	2032-8	2771-3	1-1201	219-45
900	798-675	175-358	742-6	2029-5	2772-1	1-1213	214-81
920	818-675	176-294	746-8	2026-2	2773-0	1-1226	210-36
940	838-675	177-214	750-8	2023-0	2773-8	1-1238	206-10
960	858-675	178-119	754-8	2019-8	2774-6	1-1250	202-01
980	878-675	179-009	758-7	2016-7	2775-4	1-1262	198-07
1000	898-675	179-884	762-6	2013-6	2776-2	1-1274	194-29
1050	948-675	182-015	772-0	2005-9	2778-0	1-1303	185-45
1100	998-675	184-067	781-1	1998-5	2779-7	1-1331	177-38
1150	1048-675	186-048	789-9	1991-3	2781-3	1-1359	169-99
1200	1098-675	187-961	798-4	1984-3	2782-7	1-1386	163-20
1250	1148-675	189-814	806-7	1977-4	2784-1	1-1412	156-93
1300	1198-675	191-609	814-7	1970-7	2785-4	1-1438	151-13
1350	1248-675	193-350	822-5	1964-2	2786-6	1-1464	145-74
1400	1298-675	195-042	830-1	1957-7	2787-8	1-1489	140-72
1450	1348-675	196-688	837-5	1951-4	2788-9	1-1514	136-04
1500	1398-675	198-289	844-7	1945-2	2789-9	1-1538	131-66
1550	1448-675	199-850	851-7	1939-2	2790-8	1-1563	127-55
1600	1498-675	201-372	858-6	1933-2	2791-7	1-1586	123-69
1650	1548-675	202-857	865-3	1927-3	2792-6	1-1610	120-05
1700	1598-675	204-307	871-8	1921-5	2793-4	1-1633	116-62
1750	1648-675	205-725	878-3	1915-9	2794-1	1-1656	113-38
1800	1698-675	207-111	884-6	1910-3	2794-8	1-1678	110-32
1850	1748-675	208-468	890-7	1904-7	2795-5	1-1700	107-41
1900	1798-675	209-797	896-8	1899-3	2796-1	1-1723	104-65
1950	1848-675	211-099	902-8	1893-9	2796-7	1-1744	102-03
2000	1898-675	212-375	908-6	1888-6	2797-2	1-1766	99-536
2050	1948-675	213-626	914-3	1883-4	2797-7	1-1787	97-158
2100	1998-675	214-855	920-0	1878-2	2798-2	1-1809	94-890
2150	2048-675	216-060	925-5	1873-1	2798-6	1-1830	92-723
2200	2098-675	217-244	931-0	1868-1	2799-1	1-1850	90-652
2250	2148-675	218-408	936-3	1863-1	2799-4	1-1871	88-669
2300	2198-675	219-552	941-6	1858-2	2799-8	1-1891	86-769
2350	2248-675	220-676	946-8	1853-3	2800-1	1-1912	84-948
2400	2298-675	221-783	951-9	1848-5	2800-4	1-1932	83-199
2450	2348-675	222-871	957-0	1843-7	2800-7	1-1952	81-520
2500	2398-675	223-943	962-0	1839-0	2800-9	1-1972	79-905
2550	2448-675	224-998	966-9	1834-3	2801-2	1-1991	78-352
2600	2498-675	226-037	971-7	1829-6	2801-4	1-2011	76-856
2650	2548-675	227-061	976-5	1825-1	2801-6	1-2030	75-415
2700	2598-675	228-071	981-2	1820-5	2801-7	1-2050	74-025
2750	2648-675	229-066	985-9	1816-0	2801-9	1-2069	72-684
2800	2698-675	230-047	990-5	1811-5	2802-0	1-2088	71-389
2850	2748-675	231-014	995-0	1807-1	2802-1	1-2107	70-138
2900	2798-675	231-969	999-5	1802-6	2802-2	1-2126	68-928
2950	2848-675	232-911	1004-0	1798-3	2802-2	1-2145	67-758
3000	2898-675	233-841	1008-4	1793-9	2802-3	1-2163	66-626

Table XXVII—Temperature Conversion Table

(Albert Sauveur)

C		F	C		F	C		F
-17.8	1	32.0	16.7	62	143.6	51.1	124	255
-17.2	2	33.8	17.2	63	145.4	51.7	125	257
-16.7	3	35.6	17.8	64	147.2	52.2	126	259
-16.1	4	37.4	18.3	65	149.0	52.8	127	261
-15.6	5	39.2	18.9	66	150.8	53.3	128	262
-15.0	6	41.0	19.4	67	152.6	53.9	129	264
-14.4	7	42.8	20.0	68	154.4	54.4	130	266
-13.9	8	44.6	20.6	69	156.2	55.0	131	268
-13.3	9	46.4	21.1	70	158.0	55.6	132	270
-12.8	10	48.2	21.7	71	159.8	56.1	133	271
-12.2	11	50.0	22.2	72	161.6	56.7	134	273
-11.7	12	51.8	22.8	73	163.4	57.2	135	275
-11.1	13	53.6	23.3	74	165.2	57.8	136	277
-10.6	14	55.4	23.9	75	167.0	58.3	137	279
-10.0	15	57.2	24.4	76	168.8	58.9	138	280
-9.44	16	59.0	25.0	77	170.6	59.4	139	282
-8.89	17	60.8	25.6	78	172.4	60.0	140	284
-8.33	18	62.6	26.1	79	174.2	60.6	141	286
-7.78	19	64.4	26.7	80	176.0	61.1	142	288
-7.22	20	66.2	27.2	81	177.8	61.7	143	289
-6.67	21	68.0	27.8	82	179.6	62.2	144	291
-6.11	22	69.8	28.3	83	181.4	62.8	145	293
-5.56	23	71.6	28.9	84	183.2	63.3	146	295
-5.00	24	73.4	29.4	85	185.0	63.9	147	297
-4.44	25	75.2	30.0	86	186.8	64.4	148	298
-3.89	26	77.0	30.6	87	188.6	65.0	149	300
-3.33	27	78.8	31.1	88	190.4	65.6	150	302
-2.78	28	80.6	31.7	89	192.2	66.1	151	304
-2.22	29	82.4	32.2	90	194.0	66.7	152	306
-1.67	30	84.2	32.8	91	195.8	67.2	153	307
-1.11	31	86.0	33.3	92	197.6	67.8	154	309
-0.56	32	87.8	33.9	93	199.4	68.3	155	311
0.00	33	89.6	34.4	94	201.2	68.9	156	313
0.56	34	91.4	35.0	95	203.0	69.4	157	315
1.11	35	93.2	35.6	96	204.8	70.0	158	316
1.67	36	95.0	36.1	97	206.6	70.6	159	318
2.22	37	96.8	36.7	98	208.4	71.1	160	320
2.78	38	98.6	37.2	99	210.2	76.7	170	338
3.33	39	100.4	37.8	100	212.0	82.2	180	356
3.89	40	102.2	38.3	101	214	87.8	190	374
4.44	41	104.0	38.9	102	216	93.3	200	392
5.00	42	105.8	39.4	103	217	98.9	210	410
5.56	43	107.6	40.0	104	219	100	212	413
6.11	44	109.4	40.6	105	221	104	220	428
6.67	45	111.2	41.1	106	223	110	230	446
7.22	46	113.0	41.7	107	225	116	240	464
7.78	47	114.8	42.2	108	226	121	250	482
8.33	48	116.6	42.8	109	228	127	260	500
8.89	49	118.4	43.3	110	230	132	270	518
9.44	50	120.2	43.9	111	232	138	280	536
10.0	51	122.0	44.4	112	234	143	290	554
10.6	52	123.8	45.0	113	235	149	300	572
11.1	53	125.6	45.6	114	237	154	310	590
11.7	54	127.4	46.1	115	239	160	320	608
12.2	55	129.2	46.7	116	241	166	330	626
12.8	56	131.0	47.2	117	243	171	340	644
13.3	57	132.8	47.8	118	244	177	350	662
13.9	58	134.6	48.3	119	246	182	360	680
14.4	59	136.4	48.9	120	248	188	370	698
15.0	60	138.2	49.4	121	250	193	380	716
15.6	61	140.0	50.0	122	252	199	390	734
16.1	62	141.8	50.6	123	253	204	400	752

Table XXVII - continued

C		F	C		F	C		F
210	419	770	282	568	1004	354	670	1238
215	428	788	288	598	1022	360	680	1256
221	439	806	295	628	1040	366	690	1274
227	449	824	299	678	1058	371	700	1292
232	460	842	304	708	1076	377	710	1310
238	469	860	310	738	1094	382	720	1328
243	479	878	316	768	1112	388	730	1346
249	489	896	321	798	1130	393	740	1364
254	499	914	327	828	1148	399	750	1382
260	509	932	332	858	1166	404	760	1400
266	519	950	338	888	1184	410	770	1418
271	529	968	343	918	1202	416	780	1436
277	539	986	349	948	1220	421	790	1454

NOTE The numbers in boldface type refer to the temperature either in degrees Celsius or Fahrenheit which it is desired to convert into the other scale. If converting from degrees Fahrenheit to degrees Celsius the equivalent temperature will be found in the left column while if converting from degrees Celsius to degrees Fahrenheit the answer will be found in the column on the right.

Table XXVIII Equivalents
Volume and Capacity Equivalents

m ³	ft ³	UK gal	US gal	litres	m ³
1	0 0005787	0 00360	0 00433	0 01639	1 639 × 10 ⁻³
1728	1	6 225	7 481	28 32	0 02832
277 42	0 1605	1	1 2	4 546	4 546 × 10 ⁻²
231	0 1337	0 833	1	3 785	3 785 × 10 ⁻²
61 03	0 03531	0 22	0 2642	1	1 × 10 ⁻³

Mass Equivalents

kg	oz	lb	Long ton	Short ton	Tonne
1	35 27	2 205	0 0009842	0 001102	0 001
0 02835	1	0 0625	0 0006279	0 0003125	0 00002835
0 4536	16	1	0 0004464	0 0005	0 0004536
1 016	35 840	2 240	1	1 12	1 016
907 2	32 000	2 000	0 8929	1	0 9072
1 000	35 274	2 205	0 9842	1 102	1

Density Equivalents

kg/m ³	g/ml	lb/ft ³	lb/UK gal
1	0 001	0 06243	0 01
1000	1	62 43	10
16 02	0 01602	1	0 1605

Linear Measure Equivalents

km	m	in	ft	yd	mile	micro-metre
1	10 ³	39 370	3 280 83	1 093 61	0 62137	10 ⁹
10 ⁻³	1	39 37	3 2808	1 0936	0 621 × 10 ⁻³	10 ⁶
2 54 × 10 ⁻⁴	0 0254	1	0 0833	0 02778	0 158 × 10 ⁻⁴	25 400
3 048 × 10 ⁻⁴	0 3048	12	1	0 3333	0 1894 × 10 ⁻³	304 801
9 144 × 10 ⁻⁴	0 9144	36	3	1	0 5682 × 10 ⁻³	914 402

Surface and Area Equivalents

m ²	m ²	ft ²	yd ²	acre	hectare
1	1,550	10 76	1 196	0 0002471	0 0001
0 0006452	1	0 006944	0 0007716	0 000001594	0 6452 × 10 ⁻³
0 0929	144	1	0 1111	0 0002296	0 929 × 10 ⁻³
0 8361	1,296	9	1	0 0002066	0 8361 × 10 ⁻³
4,047	6,272,640	43 560	4 840	1	0 4047
10 ⁴	15 500,030	107,639	11 960	2 471	1

Pressure Equivalents

lb/in ²	Columns of Mercury at 0°C		Columns of Water at 15°C		kg/cm ²	kPa
	mm	m	mm	m		
1	51 715	2 036	27 70	2 309	0 07031	6 8948
19 34	1 000	39 37	535 7	44 64	1 3596	133 322
0 4912	25 4	1	13 61	1 134	0 03453	3 3864
0 0361	1 867	0 0735	1	0 0833	0 00254	0 24884
0 4332	22 4	0 8819	12	1	0 03045	2 98608
14 22	735 56	28 96	394 05	32 84	1	98 067
0 14504	0 00750	0 29530	4 0186	0 33489	0 01020	1

Heat, Energy and Work Equivalents

Joules	ft lb _f	kWh	hph	cal	Btu
1	0 7376	0 2778 × 10 ⁻⁶	0 3725 × 10 ⁻⁶	0 2388	0 0009478
1 356	1	0 3766 × 10 ⁻⁶	0 505 × 10 ⁻⁶	0 3238	0 001285
3 6 × 10 ⁶	2 655 × 10 ⁶	1	1 341	859 845	3412 1
2 6845 × 10 ⁶	1 98 × 10 ⁶	0 7457	1	641 186	2544 4
4 1868	3 088	0 1163 × 10 ⁻⁵	0 15596 × 10 ⁻³	1	0 003968
1 055	778 2	0 000293	0 000393	252	1

Heat Flow Equivalents

cal/sec cm ²	cal/h cm ²	Btu/h ft ²	W/m ²
1	3 600	13 272	4 1868 × 10 ⁴
0 0002778	1	3 687	11 631
0 0000753	0 2712	1	3 1546
0 0000239	0 8598	0 3170	1

Table XXIX. Mensuration of Surfaces and Solids

The circumference of a circle = diameter $\times \frac{\pi}{2}$ (or 3 1416)
 The area of circle = square of radius $\times 3 1416$
 The area of circle = square of diameter $\times 0 7854$
 Area of sector of circle = length of arc $\times \frac{1}{2}$ radius
 Area of segment of circle = area of sector less area of triangle
 Area of square, rhombus or rhomboid = base \times height
 Area of triangle = base $\times \frac{1}{2}$ perpendicular height
 Area of equilateral triangle = square of side $\times 0 433$
 Area of trapezium = $\frac{1}{2}$ sum of the two parallel sides \times height
 Area of any rectilinear figure (that has four or more unequal sides is found by dividing it into triangles, finding the area of each and adding them together
 Area of any regular polygon = $\frac{1}{2}$ radius of the inscribed circle \times length of one side \times number of sides
 Area of paraboloid = base $\times \frac{1}{2}$ height
 Area of ellipse = major axis \times minor axis $\times 0 7854$
 Surface area of prism or cylinder = area of 2 ends + length \times perimeter
 Volume of prism or cylinder = area of base \times height
 Surface area of cone or pyramid = $\frac{1}{2}$ slant height \times perimeter of base + area of base
 Volume of cone or pyramid = $\frac{1}{3}$ area of base \times perpendicular height
 Area of surface of cube or parallelepiped = sum of the areas of the sides
 Volume of cube or parallelepiped = length \times breadth \times depth
 Surface area of sphere = square of diameter $\times 3 1416$
 Volume of sphere = cube of diameter $\times 0 5236$
 Volume of hexagonal prism = square of side \times height $\times 2 598$
 Volume of paraboloid = $\frac{1}{2}$ volume of circumscribing cylinder
 Volume of ring (circular section) = mean diameter of ring $\times 2 47 \times$ square of diameter of section
 Side of square or area equal to circle = diameter $\times 0 8862$
 Diameter of circle equal in area to square = side $\times 1 1284$
 Side of square inscribed in circle = diameter $\times 0 707$
 Diameter of circle circumscribing square = side $\times 1 414$

Table XXX. Capacity of Horizontal Cylindrical Tanks at Varying Levels

l = depth of liquid
 d = diameter of vessel

l/d	fraction of total	l/d	fraction of total	l/d	fraction of total	l/d	fraction of total
01	0017	26	2066	51	5127	76	8155
02	0048	27	2178	52	5255	77	8263
03	0087	28	2292	53	5382	78	8369
04	0134	29	2407	54	5509	79	8473
05	0187	30	2523	55	5636	80	8576
06	0245	31	2640	56	5762	81	8677
07	0308	32	2759	57	5888	82	8776
08	0375	33	2878	58	6014	83	8873
09	0446	34	2998	59	6140	84	8967
10	0520	35	3119	60	6265	85	9059
11	0598	36	3241	61	6389	86	9149
12	0680	37	3364	62	6513	87	9236
13	0764	38	3487	63	6636	88	9320
14	0851	39	3611	64	6759	89	9402
15	0941	40	3735	65	6881	90	9480
16	1033	41	3860	66	7002	91	9554
17	1127	42	3986	67	7122	92	9625
18	1224	43	4112	68	7241	93	9692
19	1323	44	4238	69	7360	94	9755
20	1424	45	4364	70	7477	95	9813
21	1527	46	4491	71	7593	96	9866
22	1631	47	4618	72	7708	97	9913
23	1737	48	4745	73	7822	98	9952
24	1845	49	4873	74	7934	99	9983
25	1953	50	5000	75	8045	1 00	1 0000

Table XXXI: Amount of CaO in Milk of Lime of Various Densities at 15 C

°Brix	°Baume	Weight milk of lime g/l	CaO g/l	CaO per cent	°Brix	°Baume	Weight milk of lime g/l	CaO g/l	CaO per cent
1.8	1	1,007	7.5	0.75	29.0	16	1,125	159	14.13
3.6	2	1,014	16.5	1.64	30.8	17	1,134	170	15.0
5.4	3	1,022	26.0	2.54	32.7	18	1,142	181	15.85
7.2	4	1,029	36.0	3.5	34.6	19	1,152	193	16.75
9.0	5	1,037	46.0	4.43	36.4	20	1,162	206	17.72
10.8	6	1,045	56.0	5.36	38.3	21	1,171	218	18.61
12.6	7	1,052	65.0	6.18	40.1	22	1,180	229	19.4
14.4	8	1,060	75.0	7.08	42.0	23	1,190	242	20.34
16.2	9	1,067	84.0	7.87	43.9	24	1,200	255	21.25
18.0	10	1,075	94.0	8.74	45.8	25	1,210	268	22.15
19.8	11	1,083	104.0	9.6	47.7	26	1,220	281	23.03
21.7	12	1,091	115.0	10.54	49.6	27	1,231	295	23.96
23.5	13	1,100	126.0	11.45	51.5	28	1,241	309	24.9
25.3	14	1,108	137.0	12.35	53.5	29	1,252	324	25.87
27.2	15	1,116	148.0	13.26	55.4	30	1,263	339	26.84

Table XXXII Fuel Value of Bagasse

(a) Gross Calorific Value (B_H) = 19410 — 51.4 pol — 194.1 water kJ/kg

Moisture per cent bagasse	Pol per cent Bagasse								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0		
38	11983	11957	11931	11906	11880	11854	11829		
39	11789	11763	11737	11712	11686	11660	11635		
40	11595	11569	11543	11518	11492	11466	11440		
41	11401	11375	11349	11323	11298	11272	11246		
42	11206	11181	11155	11129	11104	11078	11052		
43	11012	10987	10961	10935	10910	10884	10858		
44	10818	10793	10767	10741	10715	10690	10664		
45	10624	10598	10573	10547	10521	10496	10470		
46	10430	10404	10379	10353	10327	10302	10276		
47	10236	10210	10185	10159	10133	10107	10082		
48	10042	10016	9990	9965	9939	9913	9888		
49	9848	9822	9796	9771	9745	9719	9694		
50	9654	9628	9602	9577	9551	9525	9499		
51	9460	9434	9408	9382	9357	9331	9305		
52	9265	9240	9214	9188	9163	9137	9111		
53	9071	9046	9020	8994	8969	8943	8917		
54	8877	8852	8826	8800	8774	8749	8723		
55	8683	8657	8632	8606	8580	8555	8529		
Interpolations per cent moisture subtract	1 19	2 39	3 58	4 78	5 97	6 116	7 136	8 155	9 175

Approximate formula B_H — Dry Substance X 191 kJ/kg

Table XXXII: Fuel Value of Bagasse

(b) Net Calorific Value (B₁)
Formula B₁ = 18103 - 51.4 pol - 205.32 water kJ/kg

Moisture per cent bagasse	Pol per cent Bagasse								
	10	15	20	25	30	35	40	45	
38	10249	10224	10198	10172	10147	10121	10095	10070	
39	10044	10018	9993	9967	9941	9916	9890	9864	
40	9839	9813	9787	9762	9736	9710	9685	9659	
41	9633	9608	9582	9556	9531	9505	9479	9454	
42	9428	9402	9377	9351	9325	9300	9274	9248	
43	9223	9197	9171	9146	9120	9094	9069	9043	
44	9018	8992	8966	8940	8915	8889	8863	8838	
45	8812	8787	8761	8735	8709	8684	8658	8632	
46	8607	8581	8555	8530	8504	8478	8453	8427	
47	8402	8376	8350	8324	8299	8273	8247	8222	
48	8196	8171	8145	8119	8093	8068	8042	8016	
49	7991	7965	7940	7914	7888	7862	7837	7811	
50	7786	7760	7734	7709	7683	7657	7631	7606	
51	7580	7555	7529	7503	7477	7452	7426	7400	
52	7375	7349	7324	7298	7272	7246	7221	7195	
53	7170	7144	7118	7093	7067	7041	7015	6990	
54	6964	6939	6913	6887	6862	6836	6810	6784	
55	6759	6733	6708	6682	6656	6631	6605	6579	
Interpolations per cent moisture subtract	1 21	2 41	3 62	4 82	5 103	6 123	7 144	8 164	9 185

Table XXXIII—Boiling Point Elevation of Sugar Solutions and Cane Juices (°C)
at 760 mm pressure

Brix	Purity						
	100	90	80	70	60	50	40
10	0.1	0.1	0.1	0.1	0.2	0.2	0.2
15	0.2	0.2	0.2	0.2	0.3	0.3	0.4
20	0.3	0.3	0.3	0.4	0.4	0.5	0.6
25	0.4	0.5	0.5	0.6	0.7	0.8	0.9
30	0.6	0.7	0.7	0.8	1.0	1.1	1.2
35	0.8	0.9	1.0	1.1	1.3	1.4	1.6
40	1.0	1.1	1.3	1.5	1.7	1.9	2.1
45	1.4	1.5	1.8	2.0	2.2	2.4	2.7
50	1.8	1.9	2.2	2.5	2.8	3.1	3.4
55	2.3	2.5	2.8	3.1	3.5	3.9	4.3
60	3.0	3.2	3.6	4.0	4.4	4.9	5.4
65	3.8	4.1	4.5	4.9	5.3	6.0	6.5
70	5.1	5.5	6.0	6.5	7.1	7.7	8.3
75	7.0	7.5	8.0	8.6	9.4	10.1	10.8
80	9.4	10.0	10.5	11.3	12.3	13.1	14.1
85	13.0	13.7	14.4	15.3	16.4	17.4	19.1
90	19.6	20.5	21.2	22.4	23.7	25.3	
94	30.5						

Table XXXIV—Table for Rapid Filterability test

Weights of Pure Sugar Syrup filtered (between 2 and 7 minutes after application of pressure) at various final temperatures, under the standard condition of the Filterability test

Note.

This table to be used only for Celite 505- filter aid issued in 1976 Use 0.47% by weight of this filteraid

1	2	1	2
Final Temperature (°C)	Weight of Filtrate (g)	Final Temperature (°C)	Weight of Filtrate (g)
14	138	17.5	156
14.1	139	17.6	157
14.2	139	17.7	157
14.3	140	17.8	158
14.4	140	17.9	158
14.5	141	18	159
14.6	141	18.1	160
14.7	142	18.2	160
14.8	142	18.3	161
14.9	143	18.4	161
15	143	18.5	162
15.1	144	18.6	162
15.2	144	18.7	163
15.3	145	18.8	163
15.4	145	18.9	164
15.5	146	19	164
15.6	146	19.1	165
15.7	147	19.2	165
15.8	147	19.3	166
15.9	148	19.4	166
16	149	19.5	167
16.1	149	19.6	167
16.2	150	19.7	168
16.3	150	19.8	169
16.4	151	19.9	169
16.5	151	20	170
16.6	152	20.1	170
16.7	152	20.2	171
16.8	153	20.3	171
16.9	153	20.4	172
17	154	20.5	172
17.1	154	20.6	173
17.2	155	20.7	173
17.3	155	20.8	174
17.4	156	20.9	174

Table XXXIV - continued

1	2	1	2
Final Temperature (°C)	Weight of Filtrate (g)	Final Temperature (°C)	Weight of Filtrate (g)
21	175	26	201
21 1	175	26 1	202
21 2	176	26 2	202
21 3	176	26 3	203
21 4	177	26 4	204
21 5	178	26 5	204
21 6	178	26 6	205
21 7	179	26 7	205
21 8	179	26 8	206
21 9	180	26 9	206
22	180	27	207
22 1	181	27 1	207
22 2	181	27 2	208
22 3	182	27 3	208
22 4	182	27 4	209
22 5	183	27 5	209
22 6	183	27 6	210
22 7	184	27 7	210
22 8	184	27 8	211
22 9	185	27 9	212
23	185	28	212
23 1	186	28 1	213
23 2	187	28 2	213
23 3	187	28 3	214
23 4	188	28 4	214
23 5	188	28 5	215
23 6	189	28 6	215
23 7	189	28 7	216
23 8	190	28 8	216
23 9	190	28 9	217
24	191	29	217
24 1	191	29 1	218
24 2	192	29 2	218
24 3	192	29 3	219
24 4	193	29 4	220
24 5	193	29 5	220
24 6	194	29 6	221
24 7	194	29 7	221
24 8	195	29 8	222
24 9	196	29 9	222
25	196	30	223
25 1	197	30 1	223
25 2	197	30 2	224
25 3	198	30 3	224
25 4	198	30 4	225
25 5	199	30 5	225
25 6	199	30 6	226
25 7	200	30 7	227
25 8	200	30 8	227
25 9	201	30 9	228

Table XXXIV - continued

1	2	1	2
Final Temperature (°C)	Weight of Filtrate (g)	Final Temperature (°C)	Weight of Filtrate (g)
31	228	33	239
31 1	229	33 1	239
31 2	229	33 2	240
31 3	230	33 3	240
31 4	230	33 4	241
31 5	231	33 5	242
31 6	231	33 6	242
31 7	232	33 7	243
31 8	232	33 8	243
31 9	233	33 9	244
32	233	34	244
32 1	234	34 1	245
32 2	235	34 2	245
32 3	235	34 3	246
32 4	236	34 4	246
32 5	236	34 5	247
32 6	237	34 6	247
32 7	237	34 7	248
32 8	238	34 8	249
32 9	238	34 9	249
		35	250

Table XXXV—International Atomic Weights, 1971
 (Published by Petty and Chilton Chemical Engineer's Handbook Fifth Edition)

Element	Symbol	Atomic Number	Atomic Weight	Element	Symbol	Atomic Number	Atomic Weight
Actinium	Ac	89		Mercury	Hg	80	200.59
Aluminium	Al	13	26.982	Molybdenum	Mo	42	95.94
Americium	Am	95		Neodymium	Nd	60	144.24
Antimony	Sb	51	121.75	Neon	Ne	10	20.183
Argon	Ar	18	39.948	Neptunium	Np	93	
Arsenic	As	33	74.922	Nickel	Ni	28	58.71
Astatine	At	85		Niobium	Nb	41	92.906
Barium	Ba	56	137.34	Nitrogen	N	7	14.007
Berkelium	Bk	97		Nobelium	No	102	
Beryllium	Be	4	9.012	Osmium	Os	76	190.2
Bismuth	Bi	83	208.98	Oxygen	O	8	15.999
Boron	B	5	10.811	Palladium	Pd	46	106.4
Bromine	Br	35	79.909	Phosphorus	P	15	30.974
Cadmium	Cd	48	112.40	Platinum	Pt	78	195.09
Caesium	Cs	55	132.905	Plutonium	Pu	94	
Calcium	Ca	20	40.08	Polonium	Po	84	
Californium	Cf	98		Potassium	K	19	39.098
Carbon	C	6	12.011	Praseodymium	Pr	59	140.907
Cerium	Ce	58	140.12	Promethium	Pm	61	
Cesium	Cs	55	132.905	Protactinium	Pa	91	
Chlorine	Cl	17	35.453	Radium	Ra	88	
Chromium	Cr	24	51.996	Radon	Rn	86	
Cobalt	Co	27	58.933	Rhenium	Re	75	186.20
Copper	Cu	29	63.54	Rhodium	Rh	45	102.905
Curium	Cm	96		Rubidium	Rb	37	85.47
Dysprosium	Dy	66	162.50	Ruthenium	Ru	44	101.07
Einsteinium	Es	99		Samarium	Sm	62	150.35
Erbium	Er	68	167.26	Scandium	Sc	21	44.956
Europium	Eu	63	151.96	Selenium	Se	34	78.96
Fermium	Fm	100		Silicon	Si	14	28.086
Fluorine	F	9	19.00	Silver	Ag	47	107.870
Francium	Fr	87		Sodium	Na	11	22.990
Gadolinium	Gd	64	157.25	Strontium	Sr	38	87.62
Gallium	Ga	31	69.72	Sulphur	S	16	32.064
Germanium	Ge	32	72.59	Tantalum	Ta	73	180.948
Gold	Au	79	196.967	Technetium	Tc	43	
Hafnium	Hf	72	178.49	Tellurium	Te	52	127.60
Helium	He	2	4.003	Terbium	Tb	65	158.924
Holmium	Ho	67	164.930	Thallium	Tl	81	204.37
Hydrogen	H	1	1.008	Thorium	Th	90	232.038
Iodine	I	53	126.904	Thulium	Tm	69	168.934
Iodine	Ir	77	192.2	Tin	Sn	50	118.69
Iron	Fe	26	55.847	Titanium	Ti	22	47.90
Krypton	Kr	36	83.80	Tungsten	W	74	183.85
Lanthanum	La	57	138.91	Uranium	U	92	238.03
Lawrencium	Lw	103		Vanadium	V	23	50.942
Lead	Pb	82	207.19	Xenon	Xe	54	131.30
Lithium	Li	3	6.939	Ytterbium	Yb	70	173.04
Lutetium	Lu	71	174.97	Yttrium	Y	39	88.905
Magnesium	Mg	12	24.312	Zinc	Zn	30	65.38
Manganese	Mn	25	54.938	Zirconium	Zr	40	91.22
Mendelevium	Md	101					

Note: The above atomic weights are based on the isotope C12