RESOLUTION OENO 21/2004

SUBSTITUTION OF SUGAR TABLE

THE GENERAL ASSEMBLY,

IN VIEW of Article 2 paragraph iv of the Agreement of 3 April 2001 establishing the International Organisation of Vine and Wine,

CONSIDERING, the International Recommendation approved by the International Conference of Legal Metrology in 1996 concerning Refractometers for measuring the sugar content of grape musts (OIML R 124);

CONSIDERING the need to ensure the coordination of different tables with those established by the International Commission for the Unification of Methods of Sugar Analysis (ICUMSA);

UPON PROPOSAL of the Sub-Commission of Methods of Analysis of Wine,

DECIDES to replace in the Compendium of International Methods of Analysis of Wines and Musts, table I and table II of the method of determination of sugar content in musts, concentrated musts and grape sugar by refractometry, by the following tables and to complete the method with table IV: “Correspondence table between the refractive index in reference, at 6 decimals, conditions and the percentage by mass of saccharose solutions”.

Table I

Correction to be made in the case where the percentage by mass of saccharose was determined at a temperature different by 20°C.

Temperature °C	Percentage by mass measured in %													
	10	15	20	25	30	35	40	45	50	55	60	65	70	75
5	−0.82	−0.87	−0.92	−0.95	−0.99									
6	−0.80	−0.82	−0.87	−0.90	−0.94									
7	−0.74	−0.78	−0.82	−0.84	−0.88									
8	−0.69	−0.73	−0.76	−0.79	−0.82									
9	−0.64	−0.67	−0.71	−0.73	−0.75									
10	−0.59	−0.62	−0.65	−0.67	−0.69	−0.71	−0.72	−0.73	−0.74	−0.75	−0.75	−0.75	−0.75	−0.75
11	−0.54	−0.57	−0.59	−0.61	−0.63	−0.64	−0.65	−0.66	−0.67	−0.68	−0.68	−0.68	−0.68	−0.67

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12	−0.49	−0.51	−0.53	−0.55	−0.56	−0.57	−0.58	−0.59	−0.60	−0.60	−0.61	−0.61	−0.60	−0.60
13	−0.43	−0.45	−0.47	−0.48	−0.50	−0.51	−0.52	−0.52	−0.53	−0.53	−0.53	−0.53	−0.53	−0.53
14	−0.38	−0.39	−0.40	−0.42	−0.43	−0.44	−0.44	−0.45	−0.45	−0.46	−0.46	−0.46	−0.46	−0.45
15	−0.32	−0.33	−0.34	−0.35	−0.36	−0.37	−0.37	−0.38	−0.38	−0.38	−0.38	−0.38	−0.38	−0.38
16	−0.26	−0.27	−0.28	−0.28	−0.29	−0.30	−0.30	−0.30	−0.31	−0.31	−0.31	−0.31	−0.31	−0.30
17	−0.20	−0.20	−0.21	−0.21	−0.22	−0.22	−0.23	−0.23	−0.23	−0.23	−0.23	−0.23	−0.23	−0.23
18	−0.13	−0.14	−0.14	−0.14	−0.15	−0.15	−0.15	−0.15	−0.15	−0.15	−0.15	−0.15	−0.15	−0.15
19	−0.07	−0.07	−0.07	−0.07	−0.07	−0.08	−0.08	−0.08	−0.08	−0.08	−0.08	−0.08	−0.08	−0.08
20	0 REFERENCE 0													
21	+0.07	+0.07	+0.07	+0.07	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08	+0.08
22	+0.14	+0.14	+0.15	+0.15	+0.15	+0.15	+0.16	+0.16	+0.16	+0.16	+0.16	+0.16	+0.15	+0.15
23	+0.21	+0.22	+0.22	+0.23	+0.23	+0.23	+0.23	+0.24	+0.24	+0.24	+0.24	+0.23	+0.23	+0.23
24	+0.29	+0.29	+0.30	+0.30	+0.31	+0.31	+0.31	+0.32	+0.32	+0.32	+0.32	+0.31	+0.31	+0.31
25	+0.36	+0.37	+0.38	+0.38	+0.39	+0.39	+0.40	+0.40	+0.40	+0.40	+0.40	+0.39	+0.39	+0.39
26	+0.44	+0.45	+0.46	+0.46	+0.47	+0.47	+0.48	+0.48	+0.48	+0.48	+0.48	+0.47	+0.47	+0.46
27	+0.52	+0.53	+0.54	+0.55	+0.55	+0.56	+0.56	+0.56	+0.56	+0.56	+0.56	+0.55	+0.55	+0.54
28	+0.60	+0.61	+0.62	+0.63	+0.64	+0.64	+0.64	+0.65	+0.65	+0.64	+0.64	+0.64	+0.63	+0.62
29	+0.68	+0.69	+0.70	+0.71	+0.72	+0.73	+0.73	+0.73	+0.73	+0.73	+0.72	+0.72	+0.71	+0.70
30	+0.77	+0.78	+0.79	+0.80	+0.81	+0.81	+0.81	+0.82	+0.81	+0.81	+0.81	+0.80	+0.79	+0.78
31	+0.85	+0.87	+0.88	+0.89	+0.89	+0.90	+0.90	+0.90	+0.90	+0.90	+0.89	+0.88	+0.87	+0.86
32	+0.94	+0.95	+0.96	+0.97	+0.98	+0.99	+0.99	+0.99	+0.99	+0.98	+0.97	+0.96	+0.95	+0.94
33	+1.03	+1.04	+1.05	+1.06	+1.07	+1.08	+1.08	+1.08	+1.07	+1.07	+1.06	+1.05	+1.03	+1.02
34	+1.12	+1.19	+1.15	+1.15	+1.16	+1.17	+1.17	+1.17	+1.16	+1.15	+1.14	+1.13	+1.12	+1.10
35	+1.22	+1.23	+1.24	+1.25	+1.25	+1.26	+1.26	+1.25	+1.25	+1.24	+1.23	+1.21	+1.20	+1.18
36	+1.31	+1.32	+1.33	+1.34	+1.35	+1.35	+1.35	+1.35	+1.34	+1.33	+1.32	+1.30	+1.28	+1.26
37	+1.41	+1.42	+1.43	+1.44	+1.44	+1.44	+1.44	+1.44	+1.43	+1.42	+1.40	+1.38	+1.36	+1.34
38	+1.51	+1.52	+1.53	+1.53	+1.54	+1.54	+1.53	+1.53	+1.52	+1.51	+1.49	+1.47	+1.45	+1.42
39	+1.61	+1.62	+1.62	+1.63	+1.63	+1.63	+1.63	+1.62	+1.61	+1.60	+1.58	+1.56	+1.53	+1.50
40	+1.71	+1.72	+1.72	+1.73	+1.73	+1.73	+1.72	+1.71	+1.70	+1.69	+1.67	+1.64	+1.62	+1.59

It is preferable that the variations in temperature in relation to 20°C do not exceed ± 5°C.

Table II

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Table giving the sugar content of musts and concentrated musts in grammes per litre and in grammes per kilogramme, determined using a graduated refractometer, either in percentage by mass of saccharose at 20°C, or refractive index at 20°C. The mass density at 20°C is also given.

Saccharose	Refractive index	Mass density	Sugars in	Sugars in
% (m/m)	at 20°C	at 20°C	g/l	g/kg
10.0	1.34782	1.0391	82.2	79.1
10.1	1.34798	1.0395	83.3	80.1
10.2	1.34813	1.0399	84.3	81.1
10.3	1.34829	1.0403	85.4	82.1
10.4	1.34844	1.0407	86.5	83.1
10.5	1.34860	1.0411	87.5	84.1
10.6	1.34875	1.0415	88.6	85.0
10.7	1.34891	1.0419	89.6	86.0
10.8	1.34906	1.0423	90.7	87.0
10.9	1.34922	1.0427	91.8	88.0
11.0	1.34937	1.0431	92.8	89.0
11.1	1.34953	1.0436	93.9	90.0
11.2	1.34968	1.0440	95.0	91.0
11.3	1.34984	1.0444	96.0	92.0
11.4	1.34999	1.0448	97.1	92.9

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11.5	1.35015	1.0452	98.2	93.9
11.6	1.35031	1.0456	99.3	94.9
11.7	1.35046	1.0460	100.3	95.9
11.8	1.35062	1.0464	101.4	96.9
11.9	1.35077	1.0468	102.5	97.9
12.0	1.35093	1.0472	103.5	98.9
12.1	1.35109	1.0477	104.6	99.9
12.2	1.35124	1.0481	105.7	100.8
12.3	1.35140	1.0485	106.8	101.8
12.4	1.35156	1.0489	107.8	102.8
12.5	1.35171	1.0493	108.9	103.8
12.6	1.35187	1.0497	110.0	104.8
12.7	1.35203	1.0501	111.1	105.8
12.8	1.35219	1.0506	112.2	106.8
12.9	1.35234	1.0510	113.2	107.8
13.0	1.35250	1.0514	114.3	108.7
13.1	1.35266	1.0518	115.4	109.7
13.2	1.35282	1.0522	116.5	110.7
13.3	1.35298	1.0527	117.6	111.7
13.4	1.35313	1.0531	118.7	112.7

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13.5	1.35329	1.0535	119.7	113.7
13.6	1.35345	1.0539	120.8	114.7
13.7	1.35361	1.0543	121.9	115.6
13.8	1.35377	1.0548	123.0	116.6
13.9	1.35393	1.0552	124.1	117.6
14.0	1.35408	1.0556	125.2	118.6
14.1	1.35424	1.0560	126.3	119.6
14.2	1.35440	1.0564	127.4	120.6
14.3	1.35456	1.0569	128.5	121.6
14.4	1.35472	1.0573	129.6	122.5
14.5	1.35488	1.0577	130.6	123.5
14.6	1.35504	1.0581	131.7	124.5
14.7	1.35520	1.0586	132.8	125.5
14.8	1.35536	1.0590	133.9	126.5
14.9	1.35552	1.0594	135.0	127.5
15.0	1.35568	1.0598	136.1	128.4
15.1	1.35584	1.0603	137.2	129.4
15.2	1.35600	1.0607	138.3	130.4
15.3	1.35616	1.0611	139.4	131.4
15.4	1.35632	1.0616	140.5	132.4

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15.5	1.35648	1.0620	141.6	133.4
15.6	1.35664	1.0624	142.7	134.3
15.7	1.35680	1.0628	143.8	135.3
15.8	1.35696	1.0633	144.9	136.3
15.9	1.35713	1.0637	146.0	137.3
16.0	1.35729	1.0641	147.1	138.3
16.1	1.35745	1.0646	148.2	139.3
16.2	1.35761	1.0650	149.3	140.2
16.3	1.35777	1.0654	150.5	141.2
16.4	1.35793	1.0659	151.6	142.2
16.5	1.35810	1.0663	152.7	143.2
16.6	1.35826	1.0667	153.8	144.2
16.7	1.35842	1.0672	154.9	145.1
16.8	1.35858	1.0676	156.0	146.1
16.9	1.35874	1.0680	157.1	147.1
17.0	1.35891	1.0685	158.2	148.1
17.1	1.35907	1.0689	159.3	149.1
17.2	1.35923	1.0693	160.4	150.0
17.3	1.35940	1.0698	161.6	151.0
17.4	1.35956	1.0702	162.7	152.0

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17.5	1.35972	1.0707	163.8	153.0
17.6	1.35989	1.0711	164.9	154.0
17.7	1.36005	1.0715	166.0	154.9
17.8	1.36021	1.0720	167.1	155.9
17.9	1.36038	1.0724	168.3	156.9
18.0	1.36054	1.0729	169.4	157.9
18.1	1.36070	1.0733	170.5	158.9
18.2	1.36087	1.0737	171.6	159.8
18.3	1.36103	1.0742	172.7	160.8
18.4	1.36120	1.0746	173.9	161.8
18.5	1.36136	1.0751	175.0	162.8
18.6	1.36153	1.0755	176.1	163.7
18.7	1.36169	1.0760	177.2	164.7
18.8	1.36185	1.0764	178.4	165.7
18.9	1.36202	1.0768	179.5	166.7
19.0	1.36219	1.0773	180.6	167.6
19.1	1.36235	1.0777	181.7	168.6
19.2	1.36252	1.0782	182.9	169.6
19.3	1.36268	1.0786	184.0	170.6
19.4	1.36285	1.0791	185.1	171.5

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19.5	1.36301	1.0795	186.2	172.5
19.6	1.36318	1.0800	187.4	173.5
19.7	1.36334	1.0804	188.5	174.5
19.8	1.36351	1.0809	189.6	175.4
19.9	1.36368	1.0813	190.8	176.4
20.0	1.36384	1.0818	191.9	177.4
20.1	1.36401	1.0822	193.0	178.4
20.2	1.36418	1.0827	194.2	179.3
20.3	1.36434	1.0831	195.3	180.3
20.4	1.36451	1.0836	196.4	181.3
20.5	1.36468	1.0840	197.6	182.3
20.6	1.36484	1.0845	198.7	183.2
20.7	1.36501	1.0849	199.8	184.2
20.8	1.36518	1.0854	201.0	185.2
20.9	1.36535	1.0858	202.1	186.1
21.0	1.36551	1.0863	203.3	187.1
21.1	1.36568	1.0867	204.4	188.1
21.2	1.36585	1.0872	205.5	189.1
21.3	1.36602	1.0876	206.7	190.0
21.4	1.36619	1.0881	207.8	191.0

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21.5	1.36635	1.0885	209.0	192.0
21.6	1.36652	1.0890	210.1	192.9
21.7	1.36669	1.0895	211.3	193.9
21.8	1.36686	1.0899	212.4	194.9
21.9	1.36703	1.0904	213.6	195.9
22.0	1.36720	1.0908	214.7	196.8
22.1	1.36737	1.0913	215.9	197.8
22.2	1.36754	1.0917	217.0	198.8
22.3	1.36771	1.0922	218.2	199.7
22.4	1.36787	1.0927	219.3	200.7
22.5	1.36804	1.0931	220.5	201.7
22.6	1.36821	1.0936	221.6	202.6
22.7	1.36838	1.0940	222.8	203.6
22.8	1.36855	1.0945	223.9	204.6
22.9	1.36872	1.0950	225.1	205.5
23.0	1.36889	1.0954	226.2	206.5
23.1	1.36906	1.0959	227.4	207.5
23.2	1.36924	1.0964	228.5	208.4
23.3	1.36941	1.0968	229.7	209.4
23.4	1.36958	1.0973	230.8	210.4

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23.5	1.36975	1.0977	232.0	211.3
23.6	1.36992	1.0982	233.2	212.3
23.7	1.37009	1.0987	234.3	213.3
23.8	1.37026	1.0991	235.5	214.2
23.9	1.37043	1.0996	236.6	215.2
24.0	1.37060	1.1001	237.8	216.2
24.1	1.37078	1.1005	239.0	217.1
24.2	1.37095	1.1010	240.1	218.1
24.3	1.37112	1.1015	241.3	219.1
24.4	1.37129	1.1019	242.5	220.0
24.5	1.37146	1.1024	243.6	221.0
24.6	1.37164	1.1029	244.8	222.0
24.7	1.37181	1.1033	246.0	222.9
24.8	1.37198	1.1038	247.1	223.9
24.9	1.37216	1.1043	248.3	224.8
25.0	1.37233	1.1047	249.5	225.8
25.1	1.37250	1.1052	250.6	226.8
25.2	1.37267	1.1057	251.8	227.7
25.3	1.37285	1.1062	253.0	228.7
25.4	1.37302	1.1066	254.1	229.7

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25.5	1.37319	1.1071	255.3	230.6
25.6	1.37337	1.1076	256.5	231.6
25.7	1.37354	1.1080	257.7	232.5
25.8	1.37372	1.1085	258.8	233.5
25.9	1.37389	1.1090	260.0	234.5
26.0	1.37407	1.1095	261.2	235.4
26.1	1.37424	1.1099	262.4	236.4
26.2	1.37441	1.1104	263.6	237.3
26.3	1.37459	1.1109	264.7	238.3
26.4	1.37476	1.1114	265.9	239.3
26.5	1.37494	1.1118	267.1	240.2
26.6	1.37511	1.1123	268.3	241.2
26.7	1.37529	1.1128	269.5	242.1
26.8	1.37546	1.1133	270.6	243.1
26.9	1.37564	1.1138	271.8	244.1
27.0	1.37582	1.1142	273.0	245.0
27.1	1.37599	1.1147	274.2	246.0
27.2	1.37617	1.1152	275.4	246.9
27.3	1.37634	1.1157	276.6	247.9
27.4	1.37652	1.1161	277.8	248.9

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27.5	1.37670	1.1166	278.9	249.8
27.6	1.37687	1.1171	280.1	250.8
27.7	1.37705	1.1176	281.3	251.7
27.8	1.37723	1.1181	282.5	252.7
27.9	1.37740	1.1185	283.7	253.6
28.0	1.37758	1.1190	284.9	254.6
28.1	1.37776	1.1195	286.1	255.5
28.2	1.37793	1.1200	287.3	256.5
28.3	1.37811	1.1205	288.5	257.5
28.4	1.37829	1.1210	289.7	258.4
28.5	1.37847	1.1214	290.9	259.4
28.6	1.37864	1.1219	292.1	260.3
28.7	1.37882	1.1224	293.3	261.3
28.8	1.37900	1.1229	294.5	262.2
28.9	1.37918	1.1234	295.7	263.2
29.0	1.37936	1.1239	296.9	264.2
29.1	1.37954	1.1244	298.1	265.1
29.2	1.37972	1.1248	299.3	266.1
29.3	1.37989	1.1253	300.5	267.0
29.4	1.38007	1.1258	301.7	268.0

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29.5	1.38025	1.1263	302.9	268.9
29.6	1.38043	1.1268	304.1	269.9
29.7	1.38061	1.1273	305.3	270.8
29.8	1.38079	1.1278	306.5	271.8
29.9	1.38097	1.1283	307.7	272.7
30.0	1.38115	1.1287	308.9	273.7
30.1	1.38133	1.1292	310.1	274.6
30.2	1.38151	1.1297	311.3	275.6
30.3	1.38169	1.1302	312.6	276.5
30.4	1.38187	1.1307	313.8	277.5
30.5	1.38205	1.1312	315.0	278.5
30.6	1.38223	1.1317	316.2	279.4
30.7	1.38241	1.1322	317.4	280.4
30.8	1.38259	1.1327	318.6	281.3
30.9	1.38277	1.1332	319.8	282.3
31.0	1.38296	1.1337	321.1	283.2
31.1	1.38314	1.1342	322.3	284.2
31.2	1.38332	1.1346	323.5	285.1
31.3	1.38350	1.1351	324.7	286.1
31.4	1.38368	1.1356	325.9	287.0

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31.5	1.38386	1.1361	327.2	288.0
31.6	1.38405	1.1366	328.4	288.9
31.7	1.38423	1.1371	329.6	289.9
31.8	1.38441	1.1376	330.8	290.8
31.9	1.38459	1.1381	332.1	291.8
32.0	1.38478	1.1386	333.3	292.7
32.1	1.38496	1.1391	334.5	293.7
32.2	1.38514	1.1396	335.7	294.6
32.3	1.38532	1.1401	337.0	295.6
32.4	1.38551	1.1406	338.2	296.5
32.5	1.38569	1.1411	339.4	297.5
32.6	1.38587	1.1416	340.7	298.4
32.7	1.38606	1.1421	341.9	299.4
32.8	1.38624	1.1426	343.1	300.3
32.9	1.38643	1.1431	344.4	301.3
33.0	1.38661	1.1436	345.6	302.2
33.1	1.38679	1.1441	346.8	303.2
33.2	1.38698	1.1446	348.1	304.1
33.3	1.38716	1.1451	349.3	305.0
33.4	1.38735	1.1456	350.6	306.0

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33.5	1.38753	1.1461	351.8	306.9
33.6	1.38772	1.1466	353.0	307.9
33.7	1.38790	1.1471	354.3	308.8
33.8	1.38809	1.1476	355.5	309.8
33.9	1.38827	1.1481	356.8	310.7
34.0	1.38846	1.1486	358.0	311.7
34.1	1.38864	1.1491	359.2	312.6
34.2	1.38883	1.1496	360.5	313.6
34.3	1.38902	1.1501	361.7	314.5
34.4	1.38920	1.1507	363.0	315.5
34.5	1.38939	1.1512	364.2	316.4
34.6	1.38958	1.1517	365.5	317.4
34.7	1.38976	1.1522	366.7	318.3
34.8	1.38995	1.1527	368.0	319.2
34.9	1.39014	1.1532	369.2	320.2
35.0	1.39032	1.1537	370.5	321.1
35.1	1.39051	1.1542	371.8	322.1
35.2	1.39070	1.1547	373.0	323.0
35.3	1.39088	1.1552	374.3	324.0
35.4	1.39107	1.1557	375.5	324.9

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35.5	1.39126	1.1563	376.8	325.9
35.6	1.39145	1.1568	378.0	326.8
35.7	1.39164	1.1573	379.3	327.8
35.8	1.39182	1.1578	380.6	328.7
35.9	1.39201	1.1583	381.8	329.6
36.0	1.39220	1.1588	383.1	330.6
36.1	1.39239	1.1593	384.4	331.5
36.2	1.39258	1.1598	385.6	332.5
36.3	1.39277	1.1603	386.9	333.4
36.4	1.39296	1.1609	388.1	334.4
36.5	1.39314	1.1614	389.4	335.3
36.6	1.39333	1.1619	390.7	336.3
36.7	1.39352	1.1624	392.0	337.2
36.8	1.39371	1.1629	393.2	338.1
36.9	1.39390	1.1634	394.5	339.1
37.0	1.39409	1.1640	395.8	340.0
37.1	1.39428	1.1645	397.0	341.0
37.2	1.39447	1.1650	398.3	341.9
37.3	1.39466	1.1655	399.6	342.9
37.4	1.39485	1.1660	400.9	343.8

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37.5	1.39504	1.1665	402.1	344.7
37.6	1.39524	1.1671	403.4	345.7
37.7	1.39543	1.1676	404.7	346.6
37.8	1.39562	1.1681	406.0	347.6
37.9	1.39581	1.1686	407.3	348.5
38.0	1.39600	1.1691	408.6	349.4
38.1	1.39619	1.1697	409.8	350.4
38.2	1.39638	1.1702	411.1	351.3
38.3	1.39658	1.1707	412.4	352.3
38.4	1.39677	1.1712	413.7	353.2
38.5	1.39696	1.1717	415.0	354.2
38.6	1.39715	1.1723	416.3	355.1
38.7	1.39734	1.1728	417.6	356.0
38.8	1.39754	1.1733	418.8	357.0
38.9	1.39773	1.1738	420.1	357.9
39.0	1.39792	1.1744	421.4	358.9
39.1	1.39812	1.1749	422.7	359.8
39.2	1.39831	1.1754	424.0	360.7
39.3	1.39850	1.1759	425.3	361.7
39.4	1.39870	1.1765	426.6	362.6

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39.5	1.39889	1.1770	427.9	363.6
39.6	1.39908	1.1775	429.2	364.5
39.7	1.39928	1.1780	430.5	365.4
39.8	1.39947	1.1786	431.8	366.4
39.9	1.39967	1.1791	433.1	367.3
40.0	1.39986	1.1796	434.4	368.3
40.1	1.40006	1.1801	435.7	369.2
40.2	1.40025	1.1807	437.0	370.1
40.3	1.40044	1.1812	438.3	371.1
40.4	1.40064	1.1817	439.6	372.0
40.5	1.40083	1.1823	440.9	373.0
40.6	1.40103	1.1828	442.2	373.9
40.7	1.40123	1.1833	443.6	374.8
40.8	1.40142	1.1839	444.9	375.8
40.9	1.40162	1.1844	446.2	376.7
41.0	1.40181	1.1849	447.5	377.7
41.1	1.40201	1.1855	448.8	378.6
41.2	1.40221	1.1860	450.1	379.5
41.3	1.40240	1.1865	451.4	380.5
41.4	1.40260	1.1871	452.8	381.4

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41.5	1.40280	1.1876	454.1	382.3
41.6	1.40299	1.1881	455.4	383.3
41.7	1.40319	1.1887	456.7	384.2
41.8	1.40339	1.1892	458.0	385.2
41.9	1.40358	1.1897	459.4	386.1
42.0	1.40378	1.1903	460.7	387.0
42.1	1.40398	1.1908	462.0	388.0
42.2	1.40418	1.1913	463.3	388.9
42.3	1.40437	1.1919	464.7	389.9
42.4	1.40457	1.1924	466.0	390.8
42.5	1.40477	1.1929	467.3	391.7
42.6	1.40497	1.1935	468.6	392.7
42.7	1.40517	1.1940	470.0	393.6
42.8	1.40537	1.1946	471.3	394.5
42.9	1.40557	1.1951	472.6	395.5
43.0	1.40576	1.1956	474.0	396.4
43.1	1.40596	1.1962	475.3	397.3
43.2	1.40616	1.1967	476.6	398.3
43.3	1.40636	1.1973	478.0	399.2
43.4	1.40656	1.1978	479.3	400.2

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43.5	1.40676	1.1983	480.7	401.1
43.6	1.40696	1.1989	482.0	402.0
43.7	1.40716	1.1994	483.3	403.0
43.8	1.40736	1.2000	484.7	403.9
43.9	1.40756	1.2005	486.0	404.8
44.0	1.40776	1.2011	487.4	405.8
44.1	1.40796	1.2016	488.7	406.7
44.2	1.40817	1.2022	490.1	407.6
44.3	1.40837	1.2027	491.4	408.6
44.4	1.40857	1.2032	492.8	409.5
44.5	1.40877	1.2038	494.1	410.4
44.6	1.40897	1.2043	495.5	411.4
44.7	1.40917	1.2049	496.8	412.3
44.8	1.40937	1.2054	498.2	413.3
44.9	1.40958	1.2060	499.5	414.2
45.0	1.40978	1.2065	500.9	415.1
45.1	1.40998	1.2071	502.2	416.1
45.2	1.41018	1.2076	503.6	417.0
45.3	1.41039	1.2082	504.9	417.9
45.4	1.41059	1.2087	506.3	418.9

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45.5	1.41079	1.2093	507.7	419.8
45.6	1.41099	1.2098	509.0	420.7
45.7	1.41120	1.2104	510.4	421.7
45.8	1.41140	1.2109	511.7	422.6
45.9	1.41160	1.2115	513.1	423.5
46.0	1.41181	1.2120	514.5	424.5
46.1	1.41201	1.2126	515.8	425.4
46.2	1.41222	1.2131	517.2	426.3
46.3	1.41242	1.2137	518.6	427.3
46.4	1.41262	1.2142	519.9	428.2
46.5	1.41283	1.2148	521.3	429.1
46.6	1.41303	1.2154	522.7	430.1
46.7	1.41324	1.2159	524.1	431.0
46.8	1.41344	1.2165	525.4	431.9
46.9	1.41365	1.2170	526.8	432.9
47.0	1.41385	1.2176	528.2	433.8
47.1	1.41406	1.2181	529.6	434.7
47.2	1.41427	1.2187	530.9	435.7
47.3	1.41447	1.2192	532.3	436.6
47.4	1.41468	1.2198	533.7	437.5

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47.5	1.41488	1.2204	535.1	438.5
47.6	1.41509	1.2209	536.5	439.4
47.7	1.41530	1.2215	537.9	440.3
47.8	1.41550	1.2220	539.2	441.3
47.9	1.41571	1.2226	540.6	442.2
48.0	1.41592	1.2232	542.0	443.1
48.1	1.41612	1.2237	543.4	444.1
48.2	1.41633	1.2243	544.8	445.0
48.3	1.41654	1.2248	546.2	445.9
48.4	1.41674	1.2254	547.6	446.8
48.5	1.41695	1.2260	549.0	447.8
48.6	1.41716	1.2265	550.4	448.7
48.7	1.41737	1.2271	551.8	449.6
48.8	1.41758	1.2277	553.2	450.6
48.9	1.41779	1.2282	554.6	451.5
49.0	1.41799	1.2288	556.0	452.4
49.1	1.41820	1.2294	557.4	453.4
49.2	1.41841	1.2299	558.8	454.3
49.3	1.41862	1.2305	560.2	455.2
49.4	1.41883	1.2311	561.6	456.2

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49.5	1.41904	1.2316	563.0	457.1
49.6	1.41925	1.2322	564.4	458.0
49.7	1.41946	1.2328	565.8	458.9
49.8	1.41967	1.2333	567.2	459.9
49.9	1.41988	1.2339	568.6	460.8
50.0	1.42009	1.2345	570.0	461.7
50.1	1.42030	1.2350	571.4	462.7
50.2	1.42051	1.2356	572.8	463.6
50.3	1.42072	1.2362	574.2	464.5
50.4	1.42093	1.2368	575.6	465.4
50.5	1.42114	1.2373	577.1	466.4
50.6	1.42135	1.2379	578.5	467.3
50.7	1.42156	1.2385	579.9	468.2
50.8	1.42177	1.2390	581.3	469.2
50.9	1.42199	1.2396	582.7	470.1
51.0	1.42220	1.2402	584.2	471.0
51.1	1.42241	1.2408	585.6	471.9
51.2	1.42262	1.2413	587.0	472.9
51.3	1.42283	1.2419	588.4	473.8
51.4	1.42305	1.2425	589.9	474.7

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51.5	1.42326	1.2431	591.3	475.7
51.6	1.42347	1.2436	592.7	476.6
51.7	1.42368	1.2442	594.1	477.5
51.8	1.42390	1.2448	595.6	478.4
51.9	1.42411	1.2454	597.0	479.4
52.0	1.42432	1.2460	598.4	480.3
52.1	1.42454	1.2465	599.9	481.2
52.2	1.42475	1.2471	601.3	482.1
52.3	1.42496	1.2477	602.7	483.1
52.4	1.42518	1.2483	604.2	484.0
52.5	1.42539	1.2488	605.6	484.9
52.6	1.42561	1.2494	607.0	485.8
52.7	1.42582	1.2500	608.5	486.8
52.8	1.42604	1.2506	609.9	487.7
52.9	1.42625	1.2512	611.4	488.6
53.0	1.42647	1.2518	612.8	489.5
53.1	1.42668	1.2523	614.2	490.5
53.2	1.42690	1.2529	615.7	491.4
53.3	1.42711	1.2535	617.1	492.3
53.4	1.42733	1.2541	618.6	493.2

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53.5	1.42754	1.2547	620.0	494.2
53.6	1.42776	1.2553	621.5	495.1
53.7	1.42798	1.2558	622.9	496.0
53.8	1.42819	1.2564	624.4	496.9
53.9	1.42841	1.2570	625.8	497.9
54.0	1.42863	1.2576	627.3	498.8
54.1	1.42884	1.2582	628.7	499.7
54.2	1.42906	1.2588	630.2	500.6
54.3	1.42928	1.2594	631.7	501.6
54.4	1.42949	1.2600	633.1	502.5
54.5	1.42971	1.2606	634.6	503.4
54.6	1.42993	1.2611	636.0	504.3
54.7	1.43015	1.2617	637.5	505.2
54.8	1.43036	1.2623	639.0	506.2
54.9	1.43058	1.2629	640.4	507.1
55.0	1.43080	1.2635	641.9	508.0
55.1	1.43102	1.2641	643.4	508.9
55.2	1.43124	1.2647	644.8	509.9
55.3	1.43146	1.2653	646.3	510.8
55.4	1.43168	1.2659	647.8	511.7

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55.5	1.43189	1.2665	649.2	512.6
55.6	1.43211	1.2671	650.7	513.5
55.7	1.43233	1.2677	652.2	514.5
55.8	1.43255	1.2683	653.7	515.4
55.9	1.43277	1.2689	655.1	516.3
56.0	1.43299	1.2695	656.6	517.2
56.1	1.43321	1.2701	658.1	518.1
56.2	1.43343	1.2706	659.6	519.1
56.3	1.43365	1.2712	661.0	520.0
56.4	1.43387	1.2718	662.5	520.9
56.5	1.43410	1.2724	664.0	521.8
56.6	1.43432	1.2730	665.5	522.7
56.7	1.43454	1.2736	667.0	523.7
56.8	1.43476	1.2742	668.5	524.6
56.9	1.43498	1.2748	669.9	525.5
57.0	1.43520	1.2754	671.4	526.4
57.1	1.43542	1.2760	672.9	527.3
57.2	1.43565	1.2766	674.4	528.3
57.3	1.43587	1.2773	675.9	529.2
57.4	1.43609	1.2779	677.4	530.1

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57.5	1.43631	1.2785	678.9	531.0
57.6	1.43653	1.2791	680.4	531.9
57.7	1.43676	1.2797	681.9	532.8
57.8	1.43698	1.2803	683.4	533.8
57.9	1.43720	1.2809	684.9	534.7
58.0	1.43743	1.2815	686.4	535.6
58.1	1.43765	1.2821	687.9	536.5
58.2	1.43787	1.2827	689.4	537.4
58.3	1.43810	1.2833	690.9	538.3
58.4	1.43832	1.2839	692.4	539.3
58.5	1.43855	1.2845	693.9	540.2
58.6	1.43877	1.2851	695.4	541.1
58.7	1.43899	1.2857	696.9	542.0
58.8	1.43922	1.2863	698.4	542.9
58.9	1.43944	1.2870	699.9	543.8
59.0	1.43967	1.2876	701.4	544.8
59.1	1.43989	1.2882	702.9	545.7
59.2	1.44012	1.2888	704.4	546.6
59.3	1.44035	1.2894	706.0	547.5
59.4	1.44057	1.2900	707.5	548.4

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59.5	1.44080	1.2906	709.0	549.3
59.6	1.44102	1.2912	710.5	550.2
59.7	1.44125	1.2919	712.0	551.1
59.8	1.44148	1.2925	713.5	552.1
59.9	1.44170	1.2931	715.1	553.0
60.0	1.44193	1.2937	716.6	553.9
60.1	1.44216	1.2943	718.1	554.8
60.2	1.44238	1.2949	719.6	555.7
60.3	1.44261	1.2956	721.1	556.6
60.4	1.44284	1.2962	722.7	557.5
60.5	1.44306	1.2968	724.2	558.4
60.6	1.44329	1.2974	725.7	559.4
60.7	1.44352	1.2980	727.3	560.3
60.8	1.44375	1.2986	728.8	561.2
60.9	1.44398	1.2993	730.3	562.1
61.0	1.44420	1.2999	731.8	563.0
61.1	1.44443	1.3005	733.4	563.9
61.2	1.44466	1.3011	734.9	564.8
61.3	1.44489	1.3017	736.4	565.7
61.4	1.44512	1.3024	738.0	566.6

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61.5	1.44535	1.3030	739.5	567.6
61.6	1.44558	1.3036	741.1	568.5
61.7	1.44581	1.3042	742.6	569.4
61.8	1.44604	1.3049	744.1	570.3
61.9	1.44627	1.3055	745.7	571.2
62.0	1.44650	1.3061	747.2	572.1
62.1	1.44673	1.3067	748.8	573.0
62.2	1.44696	1.3074	750.3	573.9
62.3	1.44719	1.3080	751.9	574.8
62.4	1.44742	1.3086	753.4	575.7
62.5	1.44765	1.3092	755.0	576.6
62.6	1.44788	1.3099	756.5	577.5
62.7	1.44811	1.3105	758.1	578.5
62.8	1.44834	1.3111	759.6	579.4
62.9	1.44858	1.3118	761.2	580.3
63.0	1.44881	1.3124	762.7	581.2
63.1	1.44904	1.3130	764.3	582.1
63.2	1.44927	1.3137	765.8	583.0
63.3	1.44950	1.3143	767.4	583.9
63.4	1.44974	1.3149	769.0	584.8

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63.5	1.44997	1.3155	770.5	585.7
63.6	1.45020	1.3162	772.1	586.6
63.7	1.45043	1.3168	773.6	587.5
63.8	1.45067	1.3174	775.2	588.4
63.9	1.45090	1.3181	776.8	589.3
64.0	1.45113	1.3187	778.3	590.2
64.1	1.45137	1.3193	779.9	591.1
64.2	1.45160	1.3200	781.5	592.0
64.3	1.45184	1.3206	783.0	592.9
64.4	1.45207	1.3213	784.6	593.8
64.5	1.45230	1.3219	786.2	594.7
64.6	1.45254	1.3225	787.8	595.6
64.7	1.45277	1.3232	789.3	596.5
64.8	1.45301	1.3238	790.9	597.4
64.9	1.45324	1.3244	792.5	598.3
65.0	1.45348	1.3251	794.1	599.3
65.1	1.45371	1.3257	795.6	600.2
65.2	1.45395	1.3264	797.2	601.1
65.3	1.45418	1.3270	798.8	602.0
65.4	1.45442	1.3276	800.4	602.9

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65.5	1.45466	1.3283	802.0	603.8
65.6	1.45489	1.3289	803.6	604.7
65.7	1.45513	1.3296	805.1	605.6
65.8	1.45537	1.3302	806.7	606.5
65.9	1.45560	1.3309	808.3	607.4
66.0	1.45584	1.3315	809.9	608.3
66.1	1.45608	1.3322	811.5	609.2
66.2	1.45631	1.3328	813.1	610.1
66.3	1.45655	1.3334	814.7	611.0
66.4	1.45679	1.3341	816.3	611.9
66.5	1.45703	1.3347	817.9	612.8
66.6	1.45726	1.3354	819.5	613.7
66.7	1.45750	1.3360	821.1	614.6
66.8	1.45774	1.3367	822.7	615.5
66.9	1.45798	1.3373	824.3	616.3
67.0	1.45822	1.3380	825.9	617.2
67.1	1.45846	1.3386	827.5	618.1
67.2	1.45870	1.3393	829.1	619.0
67.3	1.45893	1.3399	830.7	619.9
67.4	1.45917	1.3406	832.3	620.8

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67.5	1.45941	1.3412	833.9	621.7
67.6	1.45965	1.3419	835.5	622.6
67.7	1.45989	1.3425	837.1	623.5
67.8	1.46013	1.3432	838.7	624.4
67.9	1.46037	1.3438	840.3	625.3
68.0	1.46061	1.3445	841.9	626.2
68.1	1.46085	1.3451	843.6	627.1
68.2	1.46109	1.3458	845.2	628.0
68.3	1.46134	1.3464	846.8	628.9
68.4	1.46158	1.3471	848.4	629.8
68.5	1.46182	1.3478	850.0	630.7
68.6	1.46206	1.3484	851.6	631.6
68.7	1.46230	1.3491	853.3	632.5
68.8	1.46254	1.3497	854.9	633.4
68.9	1.46278	1.3504	856.5	634.3
69.0	1.46303	1.3510	858.1	635.2
69.1	1.46327	1.3517	859.8	636.1
69.2	1.46351	1.3524	861.4	636.9
69.3	1.46375	1.3530	863.0	637.8
69.4	1.46400	1.3537	864.7	638.7

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69.5	1.46424	1.3543	866.3	639.6
69.6	1.46448	1.3550	867.9	640.5
69.7	1.46473	1.3557	869.5	641.4
69.8	1.46497	1.3563	871.2	642.3
69.9	1.46521	1.3570	872.8	643.2
70.0	1.46546	1.3576	874.5	644.1
70.1	1.46570	1.3583	876.1	645.0
70.2	1.46594	1.3590	877.7	645.9
70.3	1.46619	1.3596	879.4	646.8
70.4	1.46643	1.3603	881.0	647.7
70.5	1.46668	1.3610	882.7	648.5
70.6	1.46692	1.3616	884.3	649.4
70.7	1.46717	1.3623	886.0	650.3
70.8	1.46741	1.3630	887.6	651.2
70.9	1.46766	1.3636	889.3	652.1
71.0	1.46790	1.3643	890.9	653.0
71.1	1.46815	1.3650	892.6	653.9
71.2	1.46840	1.3656	894.2	654.8
71.3	1.46864	1.3663	895.9	655.7
71.4	1.46889	1.3670	897.5	656.6

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71.5	1.46913	1.3676	899.2	657.5
71.6	1.46938	1.3683	900.8	658.3
71.7	1.46963	1.3690	902.5	659.2
71.8	1.46987	1.3696	904.1	660.1
71.9	1.47012	1.3703	905.8	661.0
72.0	1.47037	1.3710	907.5	661.9
72.1	1.47062	1.3717	909.1	662.8
72.2	1.47086	1.3723	910.8	663.7
72.3	1.47111	1.3730	912.5	664.6
72.4	1.47136	1.3737	914.1	665.5
72.5	1.47161	1.3743	915.8	666.3
72.6	1.47186	1.3750	917.5	667.2
72.7	1.47210	1.3757	919.1	668.1
72.8	1.47235	1.3764	920.8	669.0
72.9	1.47260	1.3770	922.5	669.9
73.0	1.47285	1.3777	924.2	670.8
73.1	1.47310	1.3784	925.8	671.7
73.2	1.47335	1.3791	927.5	672.6
73.3	1.47360	1.3797	929.2	673.5
73.4	1.47385	1.3804	930.9	674.3

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73.5	1.47410	1.3811	932.6	675.2
73.6	1.47435	1.3818	934.3	676.1
73.7	1.47460	1.3825	935.9	677.0
73.8	1.47485	1.3831	937.6	677.9
73.9	1.47510	1.3838	939.3	678.8
74.0	1.47535	1.3845	941.0	679.7
74.1	1.47560	1.3852	942.7	680.6
74.2	1.47585	1.3859	944.4	681.4
74.3	1.47610	1.3865	946.1	682.3
74.4	1.47635	1.3872	947.8	683.2
74.5	1.47661	1.3879	949.5	684.1
74.6	1.47686	1.3886	951.2	685.0
74.7	1.47711	1.3893	952.9	685.9
74.8	1.47736	1.3899	954.6	686.8
74.9	1.47761	1.3906	956.3	687.7

Table IV

Correspondence table between the refractive index in reference conditions and the percentage by mass of saccharose solutions

Refractive index depending on percentage by mass of saccharose

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Percentage by mass (%)	Refractive index (n at 20°C)	Percentage by mass (%)	Refractive index (n at 20°C)	Percentage by mass (%)	Refractive index (n at 20°C)
0.0	1.332986	5.0	1.340264	10.0	1.347824
0.1	1.333129	5.1	1.340412	10.1	1.347978
0.2	1.333272	5.2	1.340561	10.2	1.348133
0.3	1.333415	5.3	1.340709	10.3	1.348287
0.4	1.333558	5.4	1.340858	10.4	1.348442
0.5	1.333702	5.5	1.341007	10.5	1.348596
0.6	1.333845	5.6	1.341156	10.6	1.348751
0.7	1.333989	5.7	1.341305	10.7	1.348906
0.8	1.334132	5.8	1.341454	10.8	1.349061
0.9	1.334276	5.9	1.341604	10.9	1.349216
1.0	1.334420	6.0	1.341753	11.0	1.349371
1.1	1.334564	6.1	1.341903	11.1	1.349527
1.2	1.334708	6.2	1.342052	11.2	1.349682
1.3	1.334852	6.3	1.342202	11.3	1.349838
1.4	1.334996	6.4	1.342352	11.4	1.349993
1.5	1.335141	6.5	1.342502	11.5	1.350149
1.6	1.335285	6.6	1.342652	11.6	1.350305
1.7	1.335430	6.7	1.342802	11.7	1.350461

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1.8	1.335574	6.8	1.342952	11.8	1.350617
1.9	1.335719	6.9	1.343103	11.9	1.350774
2.0	1.335864	7.0	1.343253	12.0	1.350930
2.1	1.336009	7.1	1.343404	12.1	1.351087
2.2	1.336154	7.2	1.343555	12.2	1.351243
2.3	1.336300	7.3	1.343706	12.3	1.351400
2.4	1.336445	7.4	1.343857	12.4	1.351557
2.5	1.336591	7.5	1.344008	12.5	1.351714
2.6	1.336736	7.6	1.344159	12.6	1.351871
2.7	1.336882	7.7	1.344311	12.7	1.352029
2.8	1.337028	7.8	1.344462	12.8	1.352186
2.9	1.337174	7.9	1.344614	12.9	1.352343
3.0	1.337320	8.0	1.344765	13.0	1.352501
3.1	1.337466	8.1	1.344917	13.1	1.352659
3.2	1.337612	8.2	1.345069	13.2	1.352817
3.3	1.337758	8.3	1.345221	13.3	1.352975
3.4	1.337905	8.4	1.345373	13.4	1.353133
3.5	1.338051	8.5	1.345526	13.5	1.353291
3.6	1.338198	8.6	1.345678	13.6	1.353449
3.7	1.338345	8.7	1.345831	13.7	1.353608

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3.8	1.338492	8.8	1.345983	13.8	1.353767
3.9	1.338639	8.9	1.346136	13.9	1.353925
4.0	1.338786	9.0	1.346289	14.0	1.354084
4.1	1.338933	9.1	1.346442	14.1	1.354243
4.2	1.339081	9.2	1.346595	14.2	1.354402
4.3	1.339228	9.3	1.346748	14.3	1.354561
4.4	1.339376	9.4	1.346902	14.4	1.354721
4.5	1.339524	9.5	1.347055	14.5	1.354880
4.6	1.339671	9.6	1.347209	14.6	1.355040
4.7	1.339819	9.7	1.347362	14.7	1.355200
4.8	1.339967	9.8	1.347516	14.8	1.355359
4.9	1.340116	9.9	1.347670	14.9	1.355519
15.0	1.355679	20.0	1.363842	25.0	1.372328
15.1	1.355840	20.1	1.364009	25.1	1.372501
15.2	1.356000	20.2	1.364176	25.2	1.372674
15.3	1.356160	20.3	1.364342	25.3	1.372847
15.4	1.356321	20.4	1.364509	25.4	1.373021
15.5	1.356482	20.5	1.364676	25.5	1.373194
15.6	1.356642	20.6	1.364843	25.6	1.373368
15.7	1.356803	20.7	1.365011	25.7	1.373542

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15.8	1.356964	20.8	1.365178	25.8	1.373716
15.9	1.357126	20.9	1.365346	25.9	1.373890
16.0	1.357287	21.0	1.365513	26.0	1.374065
16.1	1.357448	21.1	1.365681	26.1	1.374239
16.2	1.357610	21.2	1.365849	26.2	1.374414
16.3	1.357772	21.3	1.366017	26.3	1.374588
16.4	1.357933	21.4	1.366185	26.4	1.374763
16.5	1.358095	21.5	1.366354	26.5	1.374938
16.6	1.358257	21.6	1.366522	26.6	1.375113
16.7	1.358420	21.7	1.366691	26.7	1.375288
16.8	1.358582	21.8	1.366859	26.8	1.375464
16.9	1.358744	21.9	1.367028	26.9	1.375639
17.0	1.358907	22.0	1.367197	27.0	1.375815
17.1	1.359070	22.1	1.367366	27.1	1.375991
17.2	1.359232	22.2	1.367535	27.2	1.376167
17.3	1.359395	22.3	1.367705	27.3	1.376343
17.4	1.359558	22.4	1.367874	27.4	1.376519
17.5	1.359722	22.5	1.368044	27.5	1.376695
17.6	1.359885	22.6	1.368214	27.6	1.376872
17.7	1.360048	22.7	1.368384	27.7	1.377049

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17.8	1.360212	22.8	1.368554	27.8	1.377225
17.9	1.360376	22.9	1.368724	27.9	1.377402
18.0	1.360539	23.0	1.368894	28.0	1.377579
18.1	1.360703	23.1	1.369064	28.1	1.377756
18.2	1.360867	23.2	1.369235	28.2	1.377934
18.3	1.361032	23.3	1.369406	28.3	1.378111
18.4	1.361196	23.4	1.369576	28.4	1.378289
18.5	1.361360	23.5	1.369747	28.5	1.378467
18.6	1.361525	23.6	1.369918	28.6	1.378644
18.7	1.361690	23.7	1.370090	28.7	1.378822
18.8	1.361854	23.8	1.370261	28.8	1.379001
18.9	1.362019	23.9	1.370433	28.9	1.379179
19.0	1.362185	24.0	1.370604	29.0	1.379357
19.1	1.362350	24.1	1.370776	29.1	1.379536
19.2	1.362515	24.2	1.370948	29.2	1.379715
19.3	1.362681	24.3	1.371120	29.3	1.379893
19.4	1.362846	24.4	1.371292	29.4	1.380072
19.5	1.363012	24.5	1.371464	29.5	1.380251
19.6	1.363178	24.6	1.371637	29.6	1.380431
19.7	1.363344	24.7	1.371809	29.7	1.380610

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19.8	1.363510	24.8	1.371982	29.8	1.380790
19.9	1.363676	24.9	1.372155	29.9	1.380969
30.0	1.381149	35.0	1.390322	40.0	1.399860
30.1	1.381329	35.1	1.390509	40.1	1.400055
30.2	1.381509	35.2	1.390696	40.2	1.400249
30.3	1.381690	35.3	1.390884	40.3	1.400444
30.4	1.381870	35.4	1.391071	40.4	1.400639
30.5	1.382050	35.5	1.391259	40.5	1.400834
30.6	1.382231	35.6	1.391447	40.6	1.401030
30.7	1.382412	35.7	1.391635	40.7	1.401225
30.8	1.382593	35.8	1.391823	40.8	1.401421
30.9	1.382774	35.9	1.392011	40.9	1.401617
31.0	1.382955	36.0	1.392200	41.0	1.401813
31.1	1.383137	36.1	1.392388	41.1	1.402009
31.2	1.383318	36.2	1.392577	41.2	1.402205
31.3	1.383500	36.3	1.392766	41.3	1.402401
31.4	1.383682	36.4	1.392955	41.4	1.402598
31.5	1.383863	36.5	1.393144	41.5	1.402795
31.6	1.384046	36.6	1.393334	41.6	1.402992
31.7	1.384228	36.7	1.393523	41.7	1.403189

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31.8	1.384410	36.8	1.393713	41.8	1.403386
31.9	1.384593	36.9	1.393903	41.9	1.403583
32.0	1.384775	37.0	1.394092	42.0	1.403781
32.1	1.384958	37.1	1.394283	42.1	1.403978
32.2	1.385141	37.2	1.394473	42.2	1.404176
32.3	1.385324	37.3	1.394663	42.3	1.404374
32.4	1.385507	37.4	1.394854	42.4	1.404572
32.5	1.385691	37.5	1.395044	42.5	1.404770
32.6	1.385874	37.6	1.395235	42.6	1.404969
32.7	1.386058	37.7	1.395426	42.7	1.405167
32.8	1.386242	37.8	1.395617	42.8	1.405366
32.9	1.386426	37.9	1.395809	42.9	1.405565
33.0	1.386610	38.0	1.396000	43.0	1.405764
33.1	1.386794	38.1	1.396192	43.1	1.405963
33.2	1.386978	38.2	1.396383	43.2	1.406163
33.3	1.387163	38.3	1.396575	43.3	1.406362
33.4	1.387348	38.4	1.396767	43.4	1.406562
33.5	1.387532	38.5	1.396959	43.5	1.406762
33.6	1.387717	38.6	1.397152	43.6	1.406961
33.7	1.387902	38.7	1.397344	43.7	1.407162

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33.8	1.388088	38.8	1.397537	43.8	1.407362
33.9	1.388273	38.9	1.397730	43.9	1.407562
34.0	1.388459	39.0	1.397922	44.0	1.407763
34.1	1.388644	39.1	1.398116	44.1	1.407964
34.2	1.388830	39.2	1.398309	44.2	1.408165
34.3	1.389016	39.3	1.398502	44.3	1.408366
34.4	1.389202	39.4	1.398696	44.4	1.408567
34.5	1.389388	39.5	1.398889	44.5	1.408768
34.6	1.389575	39.6	1.399083	44.6	1.408970
34.7	1.389761	39.7	1.399277	44.7	1.409171
34.8	1.389948	39.8	1.399471	44.8	1.409373
34.9	1.390135	39.9	1.399666	44.9	1.409575
45.0	1.409777	50.0	1.420087	55.0	1.430800
45.1	1.409980	50.1	1.420297	55.1	1.431019
45.2	1.410182	50.2	1.420508	55.2	1.431238
45.3	1.410385	50.3	1.420718	55.3	1.431456
45.4	1.410588	50.4	1.420929	55.4	1.431675
45.5	1.410790	50.5	1.421140	55.5	1.431894
45.6	1.410994	50.6	1.421351	55.6	1.432114
45.7	1.411197	50.7	1.421562	55.7	1.432333

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45.8	1.411400	50.8	1.421774	55.8	1.432553
45.9	1.411604	50.9	1.421985	55.9	1.432773
46.0	1.411807	51.0	1.422197	56.0	1.432993
46.1	1.412011	51.1	1.422409	56.1	1.433213
46.2	1.412215	51.2	1.422621	56.2	1.433433
46.3	1.412420	51.3	1.422833	56.3	1.433653
46.4	1.412624	51.4	1.423046	56.4	1.433874
46.5	1.412828	51.5	1.423258	56.5	1.434095
46.6	1.413033	51.6	1.423471	56.6	1.434316
46.7	1.413238	51.7	1.423684	56.7	1.434537
46.8	1.413443	51.8	1.423897	56.8	1.434758
46.9	1.413648	51.9	1.424110	56.9	1.434980
47.0	1.413853	52.0	1.424323	57.0	1.435201
47.1	1.414059	52.1	1.424537	57.1	1.435423
47.2	1.414265	52.2	1.424750	57.2	1.435645
47.3	1.414470	52.3	1.424964	57.3	1.435867
47.4	1.414676	52.4	1.425178	57.4	1.436089
47.5	1.414882	52.5	1.425393	57.5	1.436312
47.6	1.415089	52.6	1.425607	57.6	1.436534
47.7	1.415295	52.7	1.425821	57.7	1.436757

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47.8	1.415502	52.8	1.426036	57.8	1.436980
47.9	1.415708	52.9	1.426251	57.9	1.437203
48.0	1.415915	53.0	1.426466	58.0	1.437427
48.1	1.416122	53.1	1.426681	58.1	1.437650
48.2	1.416330	53.2	1.426896	58.2	1.437874
48.3	1.416537	53.3	1.427112	58.3	1.438098
48.4	1.416744	53.4	1.427328	58.4	1.438322
48.5	1.416952	53.5	1.427543	58.5	1.438546
48.6	1.417160	53.6	1.427759	58.6	1.438770
48.7	1.417368	53.7	1.427975	58.7	1.438994
48.8	1.417576	53.8	1.428192	58.8	1.439219
48.9	1.417785	53.9	1.428408	58.9	1.439444
49.0	1.417993	54.0	1.428625	59.0	1.439669
49.1	1.418202	54.1	1.428842	59.1	1.439894
49.2	1.418411	54.2	1.429059	59.2	1.440119
49.3	1.418620	54.3	1.429276	59.3	1.440345
49.4	1.418829	54.4	1.429493	59.4	1.440571
49.5	1.419038	54.5	1.429711	59.5	1.440796
49.6	1.419247	54.6	1.429928	59.6	1.441022
49.7	1.419457	54.7	1.430146	59.7	1.441248

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49.8	1.419667	54.8	1.430364	59.8	1.441475
49.9	1.419877	54.9	1.430582	59.9	1.441701
60.0	1.441928	65.0	1.453478	70.0	1.465456
60.1	1.442155	65.1	1.453713	70.1	1.465700
60.2	1.442382	65.2	1.453949	70.2	1.465944
60.3	1.442609	65.3	1.454184	70.3	1.466188
60.4	1.442836	65.4	1.454420	70.4	1.466433
60.5	1.443064	65.5	1.454656	70.5	1.466678
60.6	1.443292	65.6	1.454892	70.6	1.466922
60.7	1.443519	65.7	1.455129	70.7	1.467167
60.8	1.443747	65.8	1.455365	70.8	1.467413
60.9	1.443976	65.9	1.455602	70.9	1.467658
61.0	1.444204	66.0	1.455839	71.0	1.467903
61.1	1.444432	66.1	1.456076	71.1	1.468149
61.2	1.444661	66.2	1.456313	71.2	1.468395
61.3	1.444890	66.3	1.456551	71.3	1.468641
61.4	1.445119	66.4	1.456788	71.4	1.468887
61.5	1.445348	66.5	1.457026	71.5	1.469134
61.6	1.445578	66.6	1.457264	71.6	1.469380
61.7	1.445807	66.7	1.457502	71.7	1.469627

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61.8	1.446037	66.8	1.457740	71.8	1.469874
61.9	1.446267	66.9	1.457979	71.9	1.470121
62.0	1.446497	67.0	1.458217	72.0	1.470368
62.1	1.446727	67.1	1.458456	72.1	1.470616
62.2	1.446957	67.2	1.458695	72.2	1.470863
62.3	1.447188	67.3	1.458934	72.3	1.471111
62.4	1.447419	67.4	1.459174	72.4	1.471359
62.5	1.447650	67.5	1.459413	72.5	1.471607
62.6	1.447881	67.6	1.459653	72.6	1.471855
62.7	1.448112	67.7	1.459893	72.7	1.472104
62.8	1.448343	67.8	1.460133	72.8	1.472352
62.9	1.448575	67.9	1.460373	72.9	1.472601
63.0	1.448807	68.0	1.460613	73.0	1.472850
63.1	1.449039	68.1	1.460854	73.1	1.473099
63.2	1.449271	68.2	1.461094	73.2	1.473349
63.3	1.449503	68.3	1.461335	73.3	1.473598
63.4	1.449736	68.4	1.461576	73.4	1.473848
63.5	1.449968	68.5	1.461817	73.5	1.474098
63.6	1.450201	68.6	1.462059	73.6	1.474348
63.7	1.450434	68.7	1.462300	73.7	1.474598

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63.8	1.450667	68.8	1.462542	73.8	1.474848
63.9	1.450900	68.9	1.462784	73.9	1.475099
64.0	1.451134	69.0	1.463026	74.0	1.475349
64.1	1.451367	69.1	1.463268	74.1	1.475600
64.2	1.451601	69.2	1.463511	74.2	1.475851
64.3	1.451835	69.3	1.463753	74.3	1.476103
64.4	1.452069	69.4	1.463996	74.4	1.476354
64.5	1.452304	69.5	1.464239	74.5	1.476606
64.6	1.452538	69.6	1.464482	74.6	1.476857
64.7	1.452773	69.7	1.464725	74.7	1.477109
64.8	1.453008	69.8	1.464969	74.8	1.477361
64.9	1.453243	69.9	1.465212	74.9	1.477614
75.0	1.477866	80.0	1.490708		
75.1	1.478119	80.1	1.490970		
75.2	1.478371	80.2	1.491231		
75.3	1.478624	80.3	1.491493		
75.4	1.478877	80.4	1.491754		
75.5	1.479131	80.5	1.492016		
75.6	1.479384	80.6	1.492278		
75.7	1.479638	80.7	1.492541		

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75.8	1.479892	80.8	1.492803
75.9	1.480146	80.9	1.493066
76.0	1.480400	81.0	1.493328
76.1	1.480654	81.1	1.493591
76.2	1.480909	81.2	1.493855
76.3	1.481163	81.3	1.494118
76.4	1.481418	81.4	1.494381
76.5	1.481673	81.5	1.494645
76.6	1.481929	81.6	1.494909
76.7	1.482184	81.7	1.495173
76.8	1.482439	81.8	1.495437
76.9	1.482695	81.9	1.495701
77.0	1.482951	82.0	1.495966
77.1	1.483207	82.1	1.496230
77.2	1.483463	82.2	1.496495
77.3	1.483720	82.3	1.496760
77.4	1.483976	82.4	1.497025
77.5	1.484233	82.5	1.497291
77.6	1.484490	82.6	1.497556
77.7	1.484747	82.7	1.497822

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77.8	1.485005	82.8	1.498088
77.9	1.485262	82.9	1.498354
78.0	1.485520	83.0	1.498620
78.1	1.485777	83.1	1.498887
78.2	1.486035	83.2	1.499153
78.3	1.486293	83.3	1.499420
78.4	1.486552	83.4	1.499687
78.5	1.486810	83.5	1.499954
78.6	1.487069	83.6	1.500221
78.7	1.487328	83.7	1.500488
78.8	1.487587	83.8	1.500756
78.9	1.487846	83.9	1.501024
79.0	1.488105	84.0	1.501292
79.1	1.488365	84.1	1.501560
79.2	1.488625	84.2	1.501828
79.3	1.488884	84.3	1.502096
79.4	1.489144	84.4	1.502365
79.5	1.489405	84.5	1.502634
79.6	1.489665	84.6	1.502903
79.7	1.489926	84.7	1.503172

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79.8	1.490186	84.8	1.503441
79.9	1.490447	84.9	1.503711
		85.0	1.503980

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