RESOLUTION OIV-OENO 662F-2023

SOLUBLE SOLIDS IN GRAPE JUICE, RECONSTITUTED GRAPE JUICE, CONCENTRATED GRAPE JUICE, AND GRAPE NECTAR

Type I method

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,

AT THE PROPOSAL of the "Methods of Analysis" Sub-Commission,

CONSIDERING that for grape juice, reconstituted grape juice, concentrated grape juice, and grape nectar is proposed the application of the Method OIV-MA-AS2-02 the Compendium of International Methods of Analysis of Wines and Musts,

DECIDES to add the following method:

SOLUBLE SOLIDS IN GRAPE JUICE, RECONSTITUTED GRAPE JUICE, CONCENTRATED GRAPE JUICE, AND GRAPE NECTAR

1. Scope

This document describes the method used for determining soluble solids in grape juice, reconstituted grape juice, concentrated grape juice, and grape nectar, at the indicated concentrations ranging from 10.0 °Bx to 69.2 °Bx.

2. Principle

The soluble solids content of a sample is estimated from its refractive index at 20 °C, expressed either as an absolute value or as a percentage by mass of saccharose (degrees Brix), the value is set out on the Table II to obtain the sugar content in grams per litre and in grams per kilogram for grape juice, reconstituted grape juice, concentrated grape juice or grape nectar.

3. Apparatus

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3.1. Abbe refractometer

The refractometer used must be fitted with a scale giving:

- either percentage by mass of saccharose to 0.1 %;
- or refractive indices to four decimal places.

The refractometer must be equipped with a thermometer having a scale extending at least from + 15 °C to + 25 °C and with a system for circulating water that will enable measurements to be made at a temperature of 20 ± 5 °C. The operating instructions for this instrument must be strictly adhered to, particularly with regard to calibration and the light source.

Note: An electronic refractometer can also be used. In this case, a correction is not necessary for devices that automatically take temperature into account.

3.2. Analytical balance verified and calibrated with minimum precision of 0.01 g.

4. Preparation of the sample

Pass the sample through a filter paper or dry gauze folded into four and, after discarding the first drops of the filtrate, carry out the determination on the filtered product.

In the case of concentrated grape juice, depending on its concentration, use the sample directly or prepare a dilution weighing 200 g of concentrated grape juice and adding purified water for laboratories (EN ISO 3696) up to 500 g (F = 2.5).

5. Procedure

Bring the sample to a temperature close to 20 °C. Place a small test sample on the lower prism of the refractometer, taking care (because the prisms are pressed firmly against each other) that this test sample covers the glass surface uniformly. Carry out the measurement in accordance with the operating instructions of the instrument manufacturer used. Read the percentage by mass of sucrose to within one decimal place or read the refractive index to four decimal places. Carry out at least two determinations on the same prepared sample. Note the temperature in t °C.

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6. Calculation

6.1. Temperature correction

- Instruments graduated in percentage by mass of sucrose: use Table I to obtain the temperature correction.

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													
	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	−075									
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
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
				REFERENCE										
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	+032	+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	+159

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

- Instruments graduated in refractive index: find the refractive index measured (2nd column) in Table II to obtain the corresponding value of the percentage by mass of sucrose (1st column). This value is corrected for temperature and expressed as a concentration at 20°C by means of Table I.

TABLE II - 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 (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
10.0	1.34782	1.0391	82.2	79.1	4.89
10.1	1.34798	1.0395	83.3	80.1	4.95
10.2	1.34813	1.0399	84.3	81.1	5.01
10.3	1.34829	1.0403	85.4	82.1	5.08
10.4	1.34844	1.0407	86.5	83.1	5.14
10.5	1.34860	1.0411	87.5	84.1	5.20
10.6	1.34875	1.0415	88.6	85.0	5.27
10.7	1.34891	1.0419	89.6	86.0	5.32
10.8	1.34906	1.0423	90.7	87.0	5.39
10.9	1.34922	1.0427	91.8	88.0	5.46

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
11.0	1.34937	1.0431	92.8	89.0	5.52
11.1	1.34953	1.0436	93.9	90.0	5.58
11.2	1.34968	1.0440	95.0	91.0	5.65
11.3	1.34984	1.0444	96.0	92.0	5.71
11.4	1.34999	1.0448	97.1	92.9	5.77
11.5	1.35015	1.0452	98.2	93.9	5.84
11.6	1.35031	1.0456	99.3	94.9	5.90
11.7	1.35046	1.0460	100.3	95.9	5.96
11.8	1.35062	1.0464	101.4	96.9	6.03
11.9	1.35077	1.0468	102.5	97.9	6.09
12.0	1.35093	1.0472	103.5	98.9	6.15
12.1	1.35109	1.0477	104.6	99.9	6.22
12.2	1.35124	1.0481	105.7	100.8	6.28
12.3	1.35140	1.0485	106.8	101.8	6.35
12.4	1.35156	1.0489	107.8	102.8	6.41
12.5	1.35171	1.0493	108.9	103.8	6.47
12.6	1.35187	1.0497	110.0	104.8	6.54
12.7	1.35203	1.0501	111.1	105.8	6.60

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
12.8	1.35219	1.0506	112.2	106.8	6.67
12.9	1.35234	1.0510	113.2	107.8	6.73
13.0	1.35250	1.0514	114.3	108.7	6.79
13.1	1.35266	1.0518	115.4	109.7	6.86
13.2	1.35282	1.0522	116.5	110.7	6.92
13.3	1.35298	1.0527	117.6	111.7	6.99
13.4	1.35313	1.0531	118.7	112.7	7.05
13.5	1.35329	1.0535	119.7	113.7	7.11
13.6	1.35345	1.0539	120.8	114.7	7.18
13.7	1.35361	1.0543	121.9	115.6	7.24
13.8	1.35377	1.0548	123.0	116.6	7.31
13.9	1.35393	1.0552	124.1	117.6	7.38
14.0	1.35408	1.0556	125.2	118.6	7.44
14.1	1.35424	1.0560	126.3	119.6	7.51
14.2	1.35440	1.0564	127.4	120.6	7.57
14.3	1.35456	1.0569	128.5	121.6	7.64
14.4	1.35472	1.0573	129.6	122.5	7.70
14.5	1.35488	1.0577	130.6	123.5	7.76

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
14.6	1.35504	1.0581	131.7	124.5	7.83
14.7	1.35520	1.0586	132.8	125.5	7.89
14.8	1.35536	1.0590	133.9	126.5	7.96
14.9	1.35552	1.0594	135.0	127.5	8.02
15.0	1.35568	1.0598	136.1	128.4	8.09
15.1	1.35584	1.0603	137.2	129.4	8.15
15.2	1.35600	1.0607	138.3	130.4	8.22
15.3	1.35616	1.0611	139.4	131.4	8.28
15.4	1.35632	1.0616	140.5	132.4	8.35
15.5	1.35648	1.0620	141.6	133.4	8.42
15.6	1.35664	1.0624	142.7	134.3	8.48
15.7	1.35680	1.0628	143.8	135.3	8.55
15.8	1.35696	1.0633	144.9	136.3	8.61
15.9	1.35713	1.0637	146.0	137.3	8.68
16.0	1.35729	1.0641	147.1	138.3	8.74
16.1	1.35745	1.0646	148.2	139.3	8.81
16.2	1.35761	1.0650	149.3	140.2	8.87
16.3	1.35777	1.0654	150.5	141.2	8.94

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
16.4	1.35793	1.0659	151.6	142.2	9.01
16.5	1.35810	1.0663	152.7	143.2	9.07
16.6	1.35826	1.0667	153.8	144.2	9.14
16.7	1.35842	1.0672	154.9	145.1	9.21
16.8	1.35858	1.0676	156.0	146.1	9.27
16.9	1.35874	1.0680	157.1	147.1	9.34
17.0	1.35891	1.0685	158.2	148.1	9.40
17.1	1.35907	1.0689	159.3	149.1	9.47
17.2	1.35923	1.0693	160.4	150.0	9.53
17.3	1.35940	1.0698	161.6	151.0	9.60
17.4	1.35956	1.0702	162.7	152.0	9.67
17.5	1.35972	1.0707	163.8	153.0	9.73
17.6	1.35989	1.0711	164.9	154.0	9.80
17.7	1.36005	1.0715	166.0	154.9	9.87
17.8	1.36021	1.0720	167.1	155.9	9.93
17.9	1.36038	1.0724	168.3	156.9	10.00
18.0	1.36054	1.0729	169.4	157.9	10.07
18.1	1.36070	1.0733	170.5	158.9	10.13

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
18.2	1.36087	1.0737	171.6	159.8	10.20
18.3	1.36103	1.0742	172.7	160.8	10.26
18.4	1.36120	1.0746	173.9	161.8	10.33
18.5	1.36136	1.0751	175.0	162.8	10.40
18.6	1.36153	1.0755	176.1	163.7	10.47
18.7	1.36169	1.0760	177.2	164.7	10.53
18.8	1.36185	1.0764	178.4	165.7	10.60
18.9	1.36202	1.0768	179.5	166.7	10.67
19.0	1.36219	1.0773	180.6	167.6	10.73
19.1	1.36235	1.0777	181.7	168.6	10.80
19.2	1.36252	1.0782	182.9	169.6	10.87
19.3	1.36268	1.0786	184.0	170.6	10.94
19.4	1.36285	1.0791	185.1	171.5	11.00
19.5	1.36301	1.0795	186.2	172.5	11.07
19.6	1.36318	1.0800	187.4	173.5	11.14
19.7	1.36334	1.0804	188.5	174.5	11.20
19.8	1.36351	1.0809	189.6	175.4	11.27
19.9	1.36368	1.0813	190.8	176.4	11.34

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
20.0	1.36384	1.0818	191.9	177.4	11.40
20.1	1.36401	1.0822	193.0	178.4	11.47
20.2	1.36418	1.0827	194.2	179.3	11.54
20.3	1.36434	1.0831	195.3	180.3	11.61
20.4	1.36451	1.0836	196.4	181.3	11.67
20.5	1.36468	1.0840	197.6	182.3	11.74
20.6	1.36484	1.0845	198.7	183.2	11.81
20.7	1.36501	1.0849	199.8	184.2	11.87
20.8	1.36518	1.0854	201.0	185.2	11.95
20.9	1.36535	1.0858	202.1	186.1	12.01
21.0	1.36551	1.0863	203.3	187.1	12.08
21.1	1.36568	1.0867	204.4	188.1	12.15
21.2	1.36585	1.0872	205.5	189.1	12.21
21.3	1.36602	1.0876	206.7	190.0	12.28
21.4	1.36619	1.0881	207.8	191.0	12.35
21.5	1.36635	1.0885	209.0	192.0	12.42
21.6	1.36652	1.0890	210.1	192.9	12.49
21.7	1.36669	1.0895	211.3	193.9	12.56

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
21.8	1.36686	1.0899	212.4	194.9	12.62
21.9	1.36703	1.0904	213.6	195.9	12.69
22.0	1.36720	1.0908	214.7	196.8	12.76
22.1	1.36737	1.0913	215.9	197.8	12.83
22.2	1.36754	1.0917	217.0	198.8	12.90
22.3	1.36771	1.0922	218.2	199.7	12.97
22.4	1.36787	1.0927	219.3	200.7	13.03
22.5	1.36804	1.0931	220.5	201.7	13.10
22.6	1.36821	1.0936	221.6	202.6	13.17
22.7	1.36838	1.0940	222.8	203.6	13.24
22.8	1.36855	1.0945	223.9	204.6	13.31
22.9	1.36872	1.0950	225.1	205.5	13.38
23.0	1.36889	1.0954	226.2	206.5	13.44
23.1	1.36906	1.0959	227.4	207.5	13.51
23.2	1.36924	1.0964	228.5	208.4	13.58
23.3	1.36941	1.0968	229.7	209.4	13.65
23.4	1.36958	1.0973	230.8	210.4	13.72
23.5	1.36975	1.0977	232.0	211.3	13.79

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
23.6	1.36992	1.0982	233.2	212.3	13.86
23.7	1.37009	1.0987	234.3	213.3	13.92
23.8	1.37026	1.0991	235.5	214.2	14.00
23.9	1.37043	1.0996	236.6	215.2	14.06
24.0	1.37060	1.1001	237.8	216.2	14.13
24.1	1.37078	1.1005	239.0	217.1	14.20
24.2	1.37095	1.1010	240.1	218.1	14.27
24.3	1.37112	1.1015	241.3	219.1	14.34
24.4	1.37129	1.1019	242.5	220.0	14.41
24.5	1.37146	1.1024	243.6	221.0	14.48
24.6	1.37164	1.1029	244.8	222.0	14.55
24.7	1.37181	1.1033	246.0	222.9	14.62
24.8	1.37198	1.1038	247.1	223.9	14.69
24.9	1.37216	1.1043	248.3	224.8	14.76
25.0	1.37233	1.1047	249.5	225.8	14.83
25.1	1.37250	1.1052	250.6	226.8	14.89
25.2	1.37267	1.1057	251.8	227.7	14.96
25.3	1.37285	1.1062	253.0	228.7	15.04

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
25.4	1.37302	1.1066	254.1	229.7	15.10
25.5	1.37319	1.1071	255.3	230.6	15.17
25.6	1.37337	1.1076	256.5	231.6	15.24
25.7	1.37354	1.1080	257.7	232.5	15.32
25.8	1.37372	1.1085	258.8	233.5	15.38
25.9	1.37389	1.1090	260.0	234.5	15.45
26.0	1.37407	1.1095	261.2	235.4	15.52
26.1	1.37424	1.1099	262.4	236.4	15.59
26.2	1.37441	1.1104	263.6	237.3	15.67
26.3	1.37459	1.1109	264.7	238.3	15.73
26.4	1.37476	1.1114	265.9	239.3	15.80
26.5	1.37494	1.1118	267.1	240.2	15.87
26.6	1.37511	1.1123	268.3	241.2	15.95
26.7	1.37529	1.1128	269.5	242.1	16.02
26.8	1.37546	1.1133	270.6	243.1	16.08
26.9	1.37564	1.1138	271.8	244.1	16.15
27.0	1.37582	1.1142	273.0	245.0	16.22
27.1	1.37599	1.1147	274.2	246.0	16.30

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
27.2	1.37617	1.1152	275.4	246.9	16.37
27.3	1.37634	1.1157	276.6	247.9	16.44
27.4	1.37652	1.1161	277.8	248.9	16.51
27.5	1.37670	1.1166	278.9	249.8	16.58
27.6	1.37687	1.1171	280.1	250.8	16.65
27.7	1.37705	1.1176	281.3	251.7	16.72
27.8	1.37723	1.1181	282.5	252.7	16.79
27.9	1.37740	1.1185	283.7	253.6	16.86
28.0	1.37758	1.1190	284.9	254.6	16.93
28.1	1.37776	1.1195	286.1	255.5	17.00
28.2	1.37793	1.1200	287.3	256.5	17.07
28.3	1.37811	1.1205	288.5	257.5	17.15
28.4	1.37829	1.1210	289.7	258.4	17.22
28.5	1.37847	1.1214	290.9	259.4	17.29
28.6	1.37864	1.1219	292.1	260.3	17.36
28.7	1.37882	1.1224	293.3	261.3	17.43
28.8	1.37900	1.1229	294.5	262.2	17.50
28.9	1.37918	1.1234	295.7	263.2	17.57

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
29.0	1.37936	1.1239	296.9	264.2	17.64
29.1	1.37954	1.1244	298.1	265.1	17.72
29.2	1.37972	1.1248	299.3	266.1	17.79
29.3	1.37989	1.1253	300.5	267.0	17.86
29.4	1.38007	1.1258	301.7	268.0	17.93
29.5	1.38025	1.1263	302.9	268.9	18.00
29.6	1.38043	1.1268	304.1	269.9	18.07
29.7	1.38061	1.1273	305.3	270.8	18.14
29.8	1.38079	1.1278	306.5	271.8	18.22
29.9	1.38097	1.1283	307.7	272.7	18.29
30.0	1.38115	1.1287	308.9	273.7	18.36
30.1	1.38133	1.1292	310.1	274.6	18.43
30.2	1.38151	1.1297	311.3	275.6	18.50
30.3	1.38169	1.1302	312.6	276.5	18.58
30.4	1.38187	1.1307	313.8	277.5	18.65
30.5	1.38205	1.1312	315.0	278.5	18.72
30.6	1.38223	1.1317	316.2	279.4	18.79
30.7	1.38241	1.1322	317.4	280.4	18.86

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
30.8	1.38259	1.1327	318.6	281.3	18.93
30.9	1.38277	1.1332	319.8	282.3	19.01
31.0	1.38296	1.1337	321.1	283.2	19.08
31.1	1.38314	1.1342	322.3	284.2	19.15
31.2	1.38332	1.1346	323.5	285.1	19.23
31.3	1.38350	1.1351	324.7	286.1	19.30
31.4	1.38368	1.1356	325.9	287.0	19.37
31.5	1.38386	1.1361	327.2	288.0	19.45
31.6	1.38405	1.1366	328.4	288.9	19.52
31.7	1.38423	1.1371	329.6	289.9	19.59
31.8	1.38441	1.1376	330.8	290.8	19.66
31.9	1.38459	1.1381	332.1	291.8	19.74
32.0	1.38478	1.1386	333.3	292.7	19.81
32.1	1.38496	1.1391	334.5	293.7	19.88
32.2	1.38514	1.1396	335.7	294.6	19.95
32.3	1.38532	1.1401	337.0	295.6	20.03
32.4	1.38551	1.1406	338.2	296.5	20.10
32.5	1.38569	1.1411	339.4	297.5	20.17

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
32.6	1.38587	1.1416	340.7	298.4	20.25
32.7	1.38606	1.1421	341.9	299.4	20.32
32.8	1.38624	1.1426	343.1	300.3	20.39
32.9	1.38643	1.1431	344.4	301.3	20.47
33.0	1.38661	1.1436	345.6	302.2	20.54
33.1	1.38679	1.1441	346.8	303.2	20.61
33.2	1.38698	1.1446	348.1	304.1	20.69
33.3	1.38716	1.1451	349.3	305.0	20.76
33.4	1.38735	1.1456	350.6	306.0	20.84
33.5	1.38753	1.1461	351.8	306.9	20.91
33.6	1.38772	1.1466	353.0	307.9	20.98
33.7	1.38790	1.1471	354.3	308.8	21.06
33.8	1.38809	1.1476	355.5	309.8	21.13
33.9	1.38827	1.1481	356.8	310.7	21.20
34.0	1.38846	1.1486	358.0	311.7	21.28
34.1	1.38864	1.1491	359.2	312.6	21.35
34.2	1.38883	1.1496	360.5	313.6	21.42
34.3	1.38902	1.1501	361.7	314.5	21.50

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
34.4	1.38920	1.1507	363.0	315.5	21.57
34.5	1.38939	1.1512	364.2	316.4	21.64
34.6	1.38958	1.1517	365.5	317.4	21.72
34.7	1.38976	1.1522	366.7	318.3	21.79
34.8	1.38995	1.1527	368.0	319.2	21.87
34.9	1.39014	1.1532	369.2	320.2	21.94
35.0	1.39032	1.1537	370.5	321.1	22.02
35.1	1.39051	1.1542	371.8	322.1	22.10
35.2	1.39070	1.1547	373.0	323.0	22.17
35.3	1.39088	1.1552	374.3	324.0	22.24
35.4	1.39107	1.1557	375.5	324.9	22.32
35.5	1.39126	1.1563	376.8	325.9	22.39
35.6	1.39145	1.1568	378.0	326.8	22.46
35.7	1.39164	1.1573	379.3	327.8	22.54
35.8	1.39182	1.1578	380.6	328.7	22.62
35.9	1.39201	1.1583	381.8	329.6	22.69
36.0	1.39220	1.1588	383.1	330.6	22.77
36.1	1.39239	1.1593	384.4	331.5	22.84

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
36.2	1.39258	1.1598	385.6	332.5	22.92
36.3	1.39277	1.1603	386.9	333.4	22.99
36.4	1.39296	1.1609	388.1	334.4	23.06
36.5	1.39314	1.1614	389.4	335.3	23.14
36.6	1.39333	1.1619	390.7	336.3	23.22
36.7	1.39352	1.1624	392.0	337.2	23.30
36.8	1.39371	1.1629	393.2	338.1	23.37
36.9	1.39390	1.1634	394.5	339.1	23.45
37.0	1.39409	1.1640	395.8	340.0	23.52
37.1	1.39428	1.1645	397.0	341.0	23.59
37.2	1.39447	1.1650	398.3	341.9	23.67
37.3	1.39466	1.1655	399.6	342.9	23.75
37.4	1.39485	1.1660	400.9	343.8	23.83
37.5	1.39504	1.1665	402.1	344.7	23.90
37.6	1.39524	1.1671	403.4	345.7	23.97
37.7	1.39543	1.1676	404.7	346.6	24.05
37.8	1.39562	1.1681	406.0	347.6	24.13
37.9	1.39581	1.1686	407.3	348.5	24.21

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
38.0	1.39600	1.1691	408.6	349.4	24.28
38.1	1.39619	1.1697	409.8	350.4	24.35
38.2	1.39638	1.1702	411.1	351.3	24.43
38.3	1.39658	1.1707	412.4	352.3	24.51
38.4	1.39677	1.1712	413.7	353.2	24.59
38.5	1.39696	1.1717	415.0	354.2	24.66
38.6	1.39715	1.1723	416.3	355.1	24.74
38.7	1.39734	1.1728	417.6	356.0	24.82
38.8	1.39754	1.1733	418.8	357.0	24.89
38.9	1.39773	1.1738	420.1	357.9	24.97
39.0	1.39792	1.1744	421.4	358.9	25.04
39.1	1.39812	1.1749	422.7	359.8	25.12
39.2	1.39831	1.1754	424.0	360.7	25.20
39.3	1.39850	1.1759	425.3	361.7	25.28
39.4	1.39870	1.1765	426.6	362.6	25.35
39.5	1.39889	1.1770	427.9	363.6	25.43
39.6	1.39908	1.1775	429.2	364.5	25.51
39.7	1.39928	1.1780	430.5	365.4	25.58

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
39.8	1.39947	1.1786	431.8	366.4	25.66
39.9	1.39967	1.1791	433.1	367.3	25.74
40.0	1.39986	1.1796	434.4	368.3	25.82
40.1	1.40006	1.1801	435.7	369.2	25.89
40.2	1.40025	1.1807	437.0	370.1	25.97
40.3	1.40044	1.1812	438.3	371.1	26.05
40.4	1.40064	1.1817	439.6	372.0	26.13
40.5	1.40083	1.1823	440.9	373.0	26.20
40.6	1.40103	1.1828	442.2	373.9	26.28
40.7	1.40123	1.1833	443.6	374.8	26.36
40.8	1.40142	1.1839	444.9	375.8	26.44
40.9	1.40162	1.1844	446.2	376.7	26.52
41.0	1.40181	1.1849	447.5	377.7	26.59
41.1	1.40201	1.1855	448.8	378.6	26.67
41.2	1.40221	1.1860	450.1	379.5	26.75
41.3	1.40240	1.1865	451.4	380.5	26.83
41.4	1.40260	1.1871	452.8	381.4	26.91
41.5	1.40280	1.1876	454.1	382.3	26.99

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
41.6	1.40299	1.1881	455.4	383.3	27.06
41.7	1.40319	1.1887	456.7	384.2	27.14
41.8	1.40339	1.1892	458.0	385.2	27.22
41.9	1.40358	1.1897	459.4	386.1	27.30
42.0	1.40378	1.1903	460.7	387.0	27.38
42.1	1.40398	1.1908	462.0	388.0	27.46
42.2	1.40418	1.1913	463.3	388.9	27.53
42.3	1.40437	1.1919	464.7	389.9	27.62
42.4	1.40457	1.1924	466.0	390.8	27.69
42.5	1.40477	1.1929	467.3	391.7	27.77
42.6	1.40497	1.1935	468.6	392.7	27.85
42.7	1.40517	1.1940	470.0	393.6	27.93
42.8	1.40537	1.1946	471.3	394.5	28.01
42.9	1.40557	1.1951	472.6	395.5	28.09
43.0	1.40576	1.1956	474.0	396.4	28.17
43.1	1.40596	1.1962	475.3	397.3	28.25
43.2	1.40616	1.1967	476.6	398.3	28.32
43.3	1.40636	1.1973	478.0	399.2	28.41

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
43.4	1.40656	1.1978	479.3	400.2	28.48
43.5	1.40676	1.1983	480.7	401.1	28.57
43.6	1.40696	1.1989	482.0	402.0	28.65
43.7	1.40716	1.1994	483.3	403.0	28.72
43.8	1.40736	1.2000	484.7	403.9	28.81
43.9	1.40756	1.2005	486.0	404.8	28.88
44.0	1.40776	1.2011	487.4	405.8	28.97
44.1	1.40796	1.2016	488.7	406.7	29.04
44.2	1.40817	1.2022	490.1	407.6	29.13
44.3	1.40837	1.2027	491.4	408.6	29.20
44.4	1.40857	1.2032	492.8	409.5	29.29
44.5	1.40877	1.2038	494.1	410.4	29.36
44.6	1.40897	1.2043	495.5	411.4	29.45
44.7	1.40917	1.2049	496.8	412.3	29.52
44.8	1.40937	1.2054	498.2	413.3	29.61
44.9	1.40958	1.2060	499.5	414.2	29.69
45.0	1.40978	1.2065	500.9	415.1	29.77
45.1	1.40998	1.2071	502.2	416.1	29.85

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
45.2	1.41018	1.2076	503.6	417.0	29.93
45.3	1.41039	1.2082	504.9	417.9	30.01
45.4	1.41059	1.2087	506.3	418.9	30.09
45.5	1.41079	1.2093	507.7	419.8	30.17
45.6	1.41099	1.2098	509.0	420.7	30.25
45.7	1.41120	1.2104	510.4	421.7	30.33
45.8	1.41140	1.2109	511.7	422.6	30.41
45.9	1.41160	1.2115	513.1	423.5	30.49
46.0	1.41181	1.2120	514.5	424.5	30.58
46.1	1.41201	1.2126	515.8	425.4	30.65
46.2	1.41222	1.2131	517.2	426.3	30.74
46.3	1.41242	1.2137	518.6	427.3	30.82
46.4	1.41262	1.2142	519.9	428.2	30.90
46.5	1.41283	1.2148	521.3	429.1	30.98
46.6	1.41303	1.2154	522.7	430.1	31.06
46.7	1.41324	1.2159	524.1	431.0	31.15
46.8	1.41344	1.2165	525.4	431.9	31.22
46.9	1.41365	1.2170	526.8	432.9	31.31

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
47.0	1.41385	1.2176	528.2	433.8	31.39
47.1	1.41406	1.2181	529.6	434.7	31.47
47.2	1.41427	1.2187	530.9	435.7	31.55
47.3	1.41447	1.2192	532.3	436.6	31.63
47.4	1.41468	1.2198	533.7	437.5	31.72
47.5	1.41488	1.2204	535.1	438.5	31.80
47.6	1.41509	1.2209	536.5	439.4	31.88
47.7	1.41530	1.2215	537.9	440.3	31.97
47.8	1.41550	1.2220	539.2	441.3	32.04
47.9	1.41571	1.2226	540.6	442.2	32.13
48.0	1.41592	1.2232	542.0	443.1	32.21
48.1	1.41612	1.2237	543.4	444.1	32.29
48.2	1.41633	1.2243	544.8	445.0	32.38
48.3	1.41654	1.2248	546.2	445.9	32.46
48.4	1.41674	1.2254	547.6	446.8	32.54
48.5	1.41695	1.2260	549.0	447.8	32.63
48.6	1.41716	1.2265	550.4	448.7	32.71
48.7	1.41737	1.2271	551.8	449.6	32.79

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
48.8	1.41758	1.2277	553.2	450.6	32.88
48.9	1.41779	1.2282	554.6	451.5	32.96
49.0	1.41799	1.2288	556.0	452.4	33.04
49.1	1.41820	1.2294	557.4	453.4	33.13
49.2	1.41841	1.2299	558.8	454.3	33.21
49.3	1.41862	1.2305	560.2	455.2	33.29
49.4	1.41883	1.2311	561.6	456.2	33.38
49.5	1.41904	1.2316	563.0	457.1	33.46
49.6	1.41925	1.2322	564.4	458.0	33.54
49.7	1.41946	1.2328	565.8	458.9	33.63
49.8	1.41967	1.2333	567.2	459.9	33.71
49.9	1.41988	1.2339	568.6	460.8	33.79
50.0	1.42009	1.2345	570.0	461.7	33.88
50.1	1.42030	1.2350	571.4	462.7	33.96
50.2	1.42051	1.2356	572.8	463.6	34.04
50.3	1.42072	1.2362	574.2	464.5	34.12
50.4	1.42093	1.2368	575.6	465.4	34.21
50.5	1.42114	1.2373	577.1	466.4	34.30

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
50.6	1.42135	1.2379	578.5	467.3	34.38
50.7	1.42156	1.2385	579.9	468.2	34.46
50.8	1.42177	1.2390	581.3	469.2	34.55
50.9	1.42199	1.2396	582.7	470.1	34.63
51.0	1.42220	1.2402	584.2	471.0	34.72
51.1	1.42241	1.2408	585.6	471.9	34.80
51.2	1.42262	1.2413	587.0	472.9	34.89
51.3	1.42283	1.2419	588.4	473.8	34.97
51.4	1.42305	1.2425	589.9	474.7	35.06
51.5	1.42326	1.2431	591.3	475.7	35.14
51.6	1.42347	1.2436	592.7	476.6	35.22
51.7	1.42368	1.2442	594.1	477.5	35.31
51.8	1.42390	1.2448	595.6	478.4	35.40
51.9	1.42411	1.2454	597.0	479.4	35.48
52.0	1.42432	1.2460	598.4	480.3	35.56
52.1	1.42454	1.2465	599.9	481.2	35.65
52.2	1.42475	1.2471	601.3	482.1	35.74
52.3	1.42496	1.2477	602.7	483.1	35.82

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
52.4	1.42518	1.2483	604.2	484.0	35.91
52.5	1.42539	1.2488	605.6	484.9	35.99
52.6	1.42561	1.2494	607.0	485.8	36.07
52.7	1.42582	1.2500	608.5	486.8	36.16
52.8	1.42604	1.2506	609.9	487.7	36.25
52.9	1.42625	1.2512	611.4	488.6	36.34
53.0	1.42647	1.2518	612.8	489.5	36.42
53.1	1.42668	1.2523	614.2	490.5	36.50
53.2	1.42690	1.2529	615.7	491.4	36.59
53.3	1.42711	1.2535	617.1	492.3	36.67
53.4	1.42733	1.2541	618.6	493.2	36.76
53.5	1.42754	1.2547	620.0	494.2	36.85
53.6	1.42776	1.2553	621.5	495.1	36.94
53.7	1.42798	1.2558	622.9	496.0	37.02
53.8	1.42819	1.2564	624.4	496.9	37.11
53.9	1.42841	1.2570	625.8	497.9	37.19
54.0	1.42863	1.2576	627.3	498.8	37.28
54.1	1.42884	1.2582	628.7	499.7	37.36

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
54.2	1.42906	1.2588	630.2	500.6	37.45
54.3	1.42928	1.2594	631.7	501.6	37.54
54.4	1.42949	1.2600	633.1	502.5	37.63
54.5	1.42971	1.2606	634.6	503.4	37.71
54.6	1.42993	1.2611	636.0	504.3	37.80
54.7	1.43015	1.2617	637.5	505.2	37.89
54.8	1.43036	1.2623	639.0	506.2	37.98
54.9	1.43058	1.2629	640.4	507.1	38.06
55.0	1.43080	1.2635	641.9	508.0	38.15
55.1	1.43102	1.2641	643.4	508.9	38.24
55.2	1.43124	1.2647	644.8	509.9	38.32
55.3	1.43146	1.2653	646.3	510.8	38.41
55.4	1.43168	1.2659	647.8	511.7	38.50
55.5	1.43189	1.2665	649.2	512.6	38.58
55.6	1.43211	1.2671	650.7	513.5	38.67
55.7	1.43233	1.2677	652.2	514.5	38.76
55.8	1.43255	1.2683	653.7	515.4	38.85
55.9	1.43277	1.2689	655.1	516.3	38.93

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
56.0	1.43299	1.2695	656.6	517.2	39.02
56.1	1.43321	1.2701	658.1	518.1	39.11
56.2	1.43343	1.2706	659.6	519.1	39.20
56.3	1.43365	1.2712	661.0	520.0	39.28
56.4	1.43387	1.2718	662.5	520.9	39.37
56.5	1.43410	1.2724	664.0	521.8	39.46
56.6	1.43432	1.2730	665.5	522.7	39.55
56.7	1.43454	1.2736	667.0	523.7	39.64
56.8	1.43476	1.2742	668.5	524.6	39.73
56.9	1.43498	1.2748	669.9	525.5	39.81
57.0	1.43520	1.2754	671.4	526.4	39.90
57.1	1.43542	1.2760	672.9	527.3	39.99
57.2	1.43565	1.2766	674.4	528.3	40.08
57.3	1.43587	1.2773	675.9	529.2	40.17
57.4	1.43609	1.2779	677.4	530.1	40.26
57.5	1.43631	1.2785	678.9	531.0	40.35
57.6	1.43653	1.2791	680.4	531.9	40.44
57.7	1.43676	1.2797	681.9	532.8	40.53

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
57.8	1.43698	1.2803	683.4	533.8	40.61
57.9	1.43720	1.2809	684.9	534.7	40.70
58.0	1.43743	1.2815	686.4	535.6	40.79
58.1	1.43765	1.2821	687.9	536.5	40.88
58.2	1.43787	1.2827	689.4	537.4	40.97
58.3	1.43810	1.2833	690.9	538.3	41.06
58.4	1.43832	1.2839	692.4	539.3	41.15
58.5	1.43855	1.2845	693.9	540.2	41.24
58.6	1.43877	1.2851	695.4	541.1	41.33
58.7	1.43899	1.2857	696.9	542.0	41.42
58.8	1.43922	1.2863	698.4	542.9	41.51
58.9	1.43944	1.2870	699.9	543.8	41.60
59.0	1.43967	1.2876	701.4	544.8	41.68
59.1	1.43989	1.2882	702.9	545.7	41.77
59.2	1.44012	1.2888	704.4	546.6	41.86
59.3	1.44035	1.2894	706.0	547.5	41.96
59.4	1.44057	1.2900	707.5	548.4	42.05
59.5	1.44080	1.2906	709.0	549.3	42.14

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
59.6	1.44102	1.2912	710.5	550.2	42.23
59.7	1.44125	1.2919	712.0	551.1	42.31
59.8	1.44148	1.2925	713.5	552.1	42.40
59.9	1.44170	1.2931	715.1	553.0	42.50
60.0	1.44193	1.2937	716.6	553.9	42.59
60.1	1.44216	1.2943	718.1	554.8	42.68
60.2	1.44238	1.2949	719.6	555.7	42.77
60.3	1.44261	1.2956	721.1	556.6	42.85
60.4	1.44284	1.2962	722.7	557.5	42.95
60.5	1.44306	1.2968	724.2	558.4	43.04
60.6	1.44329	1.2974	725.7	559.4	43.13
60.7	1.44352	1.2980	727.3	560.3	43.22
60.8	1.44375	1.2986	728.8	561.2	43.31
60.9	1.44398	1.2993	730.3	562.1	43.40
61.0	1.44420	1.2999	731.8	563.0	43.49
61.1	1.44443	1.3005	733.4	563.9	43.59
61.2	1.44466	1.3011	734.9	564.8	43.68
61.3	1.44489	1.3017	736.4	565.7	43.76

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
61.4	1.44512	1.3024	738.0	566.6	43.86
61.5	1.44535	1.3030	739.5	567.6	43.95
61.6	1.44558	1.3036	741.1	568.5	44.04
61.7	1.44581	1.3042	742.6	569.4	44.13
61.8	1.44604	1.3049	744.1	570.3	44.22
61.9	1.44627	1.3055	745.7	571.2	44.32
62.0	1.44650	1.3061	747.2	572.1	44.41
62.1	1.44673	1.3067	748.8	573.0	44.50
62.2	1.44696	1.3074	750.3	573.9	44.59
62.3	1.44719	1.3080	751.9	574.8	44.69
62.4	1.44742	1.3086	753.4	575.7	44.77
62.5	1.44765	1.3092	755.0	576.6	44.87
62.6	1.44788	1.3099	756.5	577.5	44.96
62.7	1.44811	1.3105	758.1	578.5	45.05
62.8	1.44834	1.3111	759.6	579.4	45.14
62.9	1.44858	1.3118	761.2	580.3	45.24
63.0	1.44881	1.3124	762.7	581.2	45.33
63.1	1.44904	1.3130	764.3	582.1	45.42

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
63.2	1.44927	1.3137	765.8	583.0	45.51
63.3	1.44950	1.3143	767.4	583.9	45.61
63.4	1.44974	1.3149	769.0	584.8	45.70
63.5	1.44997	1.3155	770.5	585.7	45.79
63.6	1.45020	1.3162	772.1	586.6	45.89
63.7	1.45043	1.3168	773.6	587.5	45.98
63.8	1.45067	1.3174	775.2	588.4	46.07
63.9	1.45090	1.3181	776.8	589.3	46.17
64.0	1.45113	1.3187	778.3	590.2	46.25
64.1	1.45137	1.3193	779.9	591.1	46.35
64.2	1.45160	1.3200	781.5	592.0	46.44
64.3	1.45184	1.3206	783.0	592.9	46.53
64.4	1.45207	1.3213	784.6	593.8	46.63
64.5	1.45230	1.3219	786.2	594.7	46.72
64.6	1.45254	1.3225	787.8	595.6	46.82
64.7	1.45277	1.3232	789.3	596.5	46.91
64.8	1.45301	1.3238	790.9	597.4	47.00
64.9	1.45324	1.3244	792.5	598.3	47.10

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
65.0	1.45348	1.3251	794.1	599.3	47.19
65.1	1.45371	1.3257	795.6	600.2	47.28
65.2	1.45395	1.3264	797.2	601.1	47.38
65.3	1.45418	1.3270	798.8	602.0	47.47
65.4	1.45442	1.3276	800.4	602.9	47.57
65.5	1.45466	1.3283	802.0	603.8	47.66
65.6	1.45489	1.3289	803.6	604.7	47.76
65.7	1.45513	1.3296	805.1	605.6	47.85
65.8	1.45537	1.3302	806.7	606.5	47.94
65.9	1.45560	1.3309	808.3	607.4	48.04
66.0	1.45584	1.3315	809.9	608.3	48.13
66.1	1.45608	1.3322	811.5	609.2	48.23
66.2	1.45631	1.3328	813.1	610.1	48.32
66.3	1.45655	1.3334	814.7	611.0	48.42
66.4	1.45679	1.3341	816.3	611.9	48.51
66.5	1.45703	1.3347	817.9	612.8	48.61
66.6	1.45726	1.3354	819.5	613.7	48.70
66.7	1.45750	1.3360	821.1	614.6	48.80

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
66.8	1.45774	1.3367	822.7	615.5	48.89
66.9	1.45798	1.3373	824.3	616.3	48.99
67.0	1.45822	1.3380	825.9	617.2	49.08
67.1	1.45846	1.3386	827.5	618.1	49.18
67.2	1.45870	1.3393	829.1	619.0	49.27
67.3	1.45893	1.3399	830.7	619.9	49.37
67.4	1.45917	1.3406	832.3	620.8	49.46
67.5	1.45941	1.3412	833.9	621.7	49.56
67.6	1.45965	1.3419	835.5	622.6	49.65
67.7	1.45989	1.3425	837.1	623.5	49.75
67.8	1.46013	1.3432	838.7	624.4	49.84
67.9	1.46037	1.3438	840.3	625.3	49.94
68.0	1.46061	1.3445	841.9	626.2	50.03
68.1	1.46085	1.3451	843.6	627.1	50.14
68.2	1.46109	1.3458	845.2	628.0	50.23
68.3	1.46134	1.3464	846.8	628.9	50.33
68.4	1.46158	1.3471	848.4	629.8	50.42
68.5	1.46182	1.3478	850.0	630.7	50.52

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Saccharose (%(m/m)	Refractive Index at 20 °C	Mass Density at 20 °C	Sugars (g/L)	Sugars (g/kg)	ABV (% v/v) at 20 °C
68.6	1.46206	1.3484	851.6	631.6	50.61
68.7	1.46230	1.3491	853.3	632.5	50.71
68.8	1.46254	1.3497	854.9	633.4	50.81
68.9	1.46278	1.3504	856.5	634.3	50.90
69.0	1.46303	1.3510	858.1	635.2	51.00
69.1	1.46327	1.3517	859.8	636.1	51.10
69.2	1.46351	1.3524	861.4	636.9	51.19
69.3	1.46375	1.3530	863.0	637.8	51.29

7. Expression of results

The results are expressed as a percentage by mass of saccharose m/m (degrees Brix) to two decimal based on the average of two determinations. In the case of the concentrated grape juice multiply the result by the dilution factor (F = 2.5).

8. Indicative characteristics of the method

A validation study was carried out for the purpose of assessing the suitability of the method for the matrix grape juice, taking into account linearity, limits of detection and quantification and the accuracy of the method. The latter parameter was determined by defining the levels of precision and trueness of the method.

8.1. Linearity of the method

Based on the results obtained from the linear regression analysis, the method proved to be linear within the ranges 10.0 °Bx to 69.2 °Bx shown in the Table III.

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8.2. Limit of detection and limit of quantification

The detection limit (LD) and limit of quantification (LoQ) were calculated from a grape juice diluted and analyzed and is equal to 3 standard deviations for the LD and 10 standard deviations for the LoQ (Table III).

8.3. Precision of the method

The parameters taken into account were repeatability and reproducibility. Table III shows the values of these parameters. The repeatability was expressed as standard deviation of repeatability (Sr) of 7 measurements for the following °Brix concentrations: 15.9 °Bx; 69.2 °Bx.

The intermediate precision (IP) was expressed as the Standard Deviation (SIP) of measurements of the same grape juice sample, made by different operators.

Table III- Characteristics of the method

Linearity range (°Bx)	Correlation coefficient (r2)	LD (°Bx)	LoQ (°Bx)	Repeatability Standard Deviation • (n = 7) • S_r	Intermediate Precision (IP) Standard Deviation • (n = 14) • S_{IP}
10.0 – 69.2	0.9999	0.5	1.7	0.03 °Bx	0.04 °Bx

9. Bibliography

1. OIV. Compendium of International Methods of Analysis of Wines and Musts. Method OIV-MA-AS2-02.
2. BS EN ISO 3696, Water for Analytical Laboratory Use — Specification and Test Methods, 1995.

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