COEI-1-SUCRAI Grape sugar (rectified concentrated grape musts)

1. Objective, origin and scope of application

Grape sugar is obtained exclusively from grape musts. The addition of grape sugar to wine is subject to regulation.

The label, or, when this is absent, the documentation accompanying the containers of grape sugar, must cite the sugar percentage.

2. Properties

Syrupy, milk-white or slightly yellowish liquid with a sugary flavor.

Refraction index at 20 °C	1.42410-1.46663
Total sugar in terms of invert sugar	63% (m/m) minimum
Absorbance at 425 nm under 1 cm at 25° Brix	maximum 0.100
pH at 25° Brix	maximum 5 *
Titration acidity in mEq/kg of sugar	maximum 15 *
Sucrose by recommended method	negative
Sulfur dioxide in mg/kg of sugar	maximum 25
Folin-Ciocalteu index at 25° Brix	maximum 6
Total cations in mEq/kg of sugar	maximum 8
Conductivity at 25° Brix in Micro-Siemens/cm (μScm^{-1})	maximum 120
5-(hydroxymethyl)furfural in mg/kg sugar	maximum 25
Residual ethanol in g/kg sugar	maximum 8
Heavy metals in mg/kg grape sugar expressed in terms of lead	less than 10

No antiseptics and anti-fermenting agents
1° Brix = 1 g of sugar in 100 g of solution

* after vacuum removal of the carbon dioxide

3. Tests

3.1. Preparing the Sample

Drawing samples for the various different analyses is difficult; therefore. the following two dilutions are recommended:

3.1.1. Principal Solution I - for the following tests: titration acidity, total sulfur dioxide and total cations

Weigh exactly 200 g of grape sugar. Fill to 500 ml with water.

3.1.2. Principal Solution II - necessary for the following tests: Folin-Ciocalteu index, pH, conductivity, sucrose test and absorbance at 425 nm.

Dilute the grape sugar with water until it has a concentration of 25° ± 0.5° Brix (25 g of sugar in 100 g of solution).

3.2. Refraction Index at 20 °C (total sugars)

3.2.1. Equipment*:*

The refractometer used gives the following, based on type of graduation:

- 0.1% by mass of sucrose (or dry matter or Brix degrees)
- the 5th decimal of the index of refraction

The refractometer used should be equipped with a thermometer (+ 10 °C at + 30 °C).

3.2.2. Procedure Method*:*

Place two drops of grape sugar on the surface of the fixed prism. Lower the moving prism and point the instrument toward a light source that illuminates the graduated scale. Observe the line of separation on this scale between a lower clear zone and an upper dark. Read the graduation line at which this line of separation occurs and record the temperature in °C.

3.2.3. Calculation*:*

If the device is graduated in percentage (m/m) of sucrose (or dry matter or Brix degrees), the measurement converted to 20 °C using Table 2 is recorded in Table 1 which provides (Column 3) total sugar content in percent (m/m) expressed in terms of sugar.

If the device is graduated by refraction index, the index measured at t °C is used to obtain the corresponding value in percent of sucrose (m/m) at t °C in Table 1 (Column 1). This value as expressed at 20 °C using the temperature correction table N° 2, transferred to Table 1, which, in Column 3, gives the total sugar number in percent (m/m) of invert sugar.

To obtain the refraction index at 20 °C, refer to the total sugar content expressed in terms of invert sugar in Table 1.

3.2.4. Recording the Findings*:*

Total sugar content is expressed parts per 100 by mass of sucrose and is recorded with a decimal.

The refraction index at 20 °C is expressed to 5 decimal places.

3.3. Absorbance of a 25° Brix Solution at 425 nm (Chromatic characteristics)[1]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-08).

3.4. Measuring pH[2]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-06).

3.5. Titration Acidity[3]

Place 10 ml of Principal Solution I in a cylindrical vessel (3.1.1). Add Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-05).

3.6. Sucrose Test by HPLC[4]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-04).

3.7. Sulfur Dioxide[5]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-07).

3.8. Folin-Ciocalteu Index of the 25° Brix Solution

Place the following, in order, in a 100 ml volumetric flask:

- 5 ml of Principal Solution II
- 50 ml water

- 5 ml Folin-Ciocalteu reagent (R)
- 20 ml of sodium carbonate solution (R)

Fill to the 100 ml level with water. Stir to homogenize. Wait 30 minutes for the reaction to stabilize.

Determine absorbance at 750 nm in 1 cm as compared with a control prepared with water instead of Principal Solution II.

Expressing the results:

Express the results in the form of an index obtained by multiplying the absorbance by 16 in order to obtain a scale comparable to that used for wines.

3.9. Total Cations

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-09).

3.10. Conductivity of the Solution at 25° Brix[6]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-01).

3.11. 5-(Hydroxymethyl)furfural(HMF)[7]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-02)

3.12. Heavy Metals

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-10; Method OIV-MA-F1-11).

(Heavy metal content, expressed in terms of lead, should be less than 10 mg/kg).

3.13. Lead

Using the method set forth in the Compendium, quantitatively analyze lead in the Principal Solution I (3.1.1). (Lead content should be less than 1 mg/kg.)

3.14. Mercury

Using the method set forth in the annex, quantitatively analyze mercury in the Principal Solution I (3.1.1). (Mercury content should be less than 0.3 mg/kg.)

3.15. Arsenic

Using the method described in the annex, quantitatively analyze arsenic in the Principal Solution I (3.1.1). (Arsenic concentration should be less than 0.5 mg/kg.)

3.16. Ethanol[8]

Proceed to the analysis according to the method described in the Compendium of international methods of wine and must analysis (Method OIV-MA-F1-03).

3.17. Meso-Inositol

Gas phase chromatography of a silyl-containing derivative.

N.B. : The information given above is provided for informational purposes. There are other techniques for deriving sugars and polyhydroxy alcohols, and chromatographic methods for determining meso-inositol concentrations

3.17.1. Preparing the sample*:*

Dilute 5 g of grape sugar in 50 ml of water. Dry 50 µl of the dilution and 50 µl of a methyl D-glucopyranoside solution in a concentration of 1 g/liter, (internal standard) under a vacuum in a small 2 ml flask.

Dissolve the residue with 100 µl of pyridine. Add 100 µl of trimethylchlorosilane. Seal the small flask with a teflon stopper and heat at 80 °C for 1 hour. Inject 1 µl with division of the injected volume to 1/60.

3.17.2. Separation

Column: apolar capillary type of fused silica 25 m long and inner diameter of 0.2 mm.

Supporting Gas: helium, 1 ml/minute

Injector and detector: 280 °C

Column temperature: 60-250 °C, at 4 °C per minute, then isothermal at 250 °C.

3.17.3. *Expressing the results:* g per kg of sugar

4. Storage

Grape sugar must be stored in impermeable containers and at ambient termperature from the time it is made.

Annex 1 (sugars)

Table 1 : Sugar content in musts using refractometry

Sucrose % (m/m)	Index of refraction at 20°C	Density at 20°C	Sugars in g/l	Sugars in g/kg
50.0	1.42008	1.2342	627.6	508.5
50.1	1.42029	1.2348	629.3	509.6
50.2	1.42050	1.2355	630.9	510.6

50.3	1.42071	1.2362	632.4	511.6
50.4	1.42092	1.2367	634.1	512.7
50.5	1.42113	1.2374	635.7	513.7
50.6	1.42135	1.2381	637.3	514.7
50.7	1.42156	1.2386	638.7	515.7
50.8	1.42177	1.2391	640.4	516.8
50.9	1.42198	1.2396	641.9	517.8
51.0	1.42219	1.2401	643.4	518.8
51.1	1.42240	1.2406	645.0	519.9
51.2	1.42261	1.2411	646.5	520.9
51.3	1.42282	1.2416	648.1	522.0
51.4	1.42304	1.2421	649.6	523.0
51.5	1.42325	1.2427	651.2	524.0
51.6	1.42347	1.2434	652.9	525.1
51.7	1.42368	1.2441	654.5	526.1
51.8	1.42389	1.2447	656.1	527.1
51.9	1.42410	1.2454	657.8	528.2
52.0	1.42432	1.2461	659.4	529.2
52.1	1.42453	1.2466	661.0	530.2
52.2	1.42475	1.2470	662.5	531.3
52.3	1.42496	1.2475	664.1	532.3

52.4	1.42517	1.2480	665.6	533.3
52.5	1.42538	1.2486	667.2	534.4
52.6	1.42560	1.2493	668.9	535.4
52.7	1.42581	1.2500	670.5	536.4
52.8	1.42603	1.2506	672.2	537.5
52.9	1.42624	1.2513	673.8	538.5
53.0	1.42645	1.2520	675.5	539.5
53.1	1.42667	1.2525	677.1	540.6
53.2	1.42689	1.2530	678.5	541.5
53.3	1.42711	1.2535	680.2	542.6
53.4	1.42733	1.2540	681.8	543.7
53.5	1.42754	1.2546	683.4	544.7
53.6	1.42776	1.2553	685.1	545.8
53.7	1.42797	1.2560	686.7	546.7
53.8	1.42819	1.2566	688.4	547.8
53.9	1.42840	1.2573	690.1	548.9
54.0	1.42861	1.2580	691.7	549.8
54.1	1.42884	1.2585	693.3	550.9
54.2	1.42906	1.2590	694.9	551.9
54.3	1.42927	1.2595	696.5	553.0
54.4	1.42949	1.2600	698.1	554.0

54.5	1.42971	1.2606	699.7	555.1
54.6	1.42993	1.2613	701.4	556.1
54.7	1.43014	1.2620	703.1	557.1
54.8	1.43036	1.2625	704.7	558.2
54.9	1.43058	1.2630	706.2	559.1
55.0	1.43079	1.2635	707.8	560.2
55.1	1.43102	1.2639	709.4	561.3
55.2	1.43124	1.2645	711.0	562.3
55.3	1.43146	1.2652	712.7	563.3
55.4	1.43168	1.2659	714.4	564.3
55.5	1.43189	1.2665	716.1	565.4
55.6	1.43211	1.2672	717.8	566.4
55.7	1.43233	1.2679	719.5	567.5
55.8	1.43255	1.2685	721.1	568.5
55.9	1.43277	1.2692	722.8	569.5
56.0	1.43298	1.2699	724.5	570.5
56.1	1.43321	1.2703	726.1	571.6
56.2	1.43343	1.2708	727.7	572.6
56.3	1.43365	1.2713	729.3	573.7
56.4	1.43387	1.2718	730.9	574.7
56.5	1.43409	1.2724	732.6	575.8

56.6	1.43431	1.2731	734.3	576.8
56.7	1.43454	1.2738	736.0	577.8
56.8	1.43476	1.2744	737.6	578.8
56.9	1.43498	1.2751	739.4	579.9
57.0	1.43519	1.2758	741.1	580.9
57.1	1.43542	1.2763	742.8	582.0
57.2	1.43564	1.2768	744.4	583.0
57.3	1.43586	1.2773	745.9	584.0
57.4	1.43609	1.2778	747.6	585.1
57.5	1.43631	1.2784	749.3	586.1
57.6	1.43653	1.2791	751.0	587.1
57.7	1.43675	1.2798	752.7	588.1
57.8	1.43698	1.2804	754.4	589.2
57.9	1.43720	1.2810	756.1	590.2
58.0	1.43741	1.2818	757.8	591.2
58.1	1.43764	1.2822	759.5	592.3
58.2	1.43784	1.2827	761.1	593.4
58.3	1.43809	1.2832	762.6	594.3
58.4	1.43832	1.2837	764.3	595.4
58.5	1.43854	1.2843	766.0	596.4
58.6	1.43877	1.2850	767.8	597.5

58.7	1.43899	1.2857	769.5	598.5
58.8	1.43922	1.2863	771.1	599.5
58.9	1.43944	1.2869	772.9	600.6
59.0	1.43966	1.2876	774.6	601.6
59.1	1.43988	1.2882	776.3	602.6
59.2	1.44011	1.2889	778.1	603.7
59.3	1.44034	1.2896	779.8	604.7
59.4	1.44057	1.2902	781.6	605.8
59.5	1.44079	1.2909	783.3	606.8
59.6	1.44102	1.2916	785.2	607.9
59.7	1.44124	1.2921	786.8	608.9
59.8	1.44147	1.2926	788.4	609.9
59.9	1.44169	1.2931	790.0	610.9
60.0	1.44192	1.2936	791.7	612.0
60.1	1.44215	1.2942	793.3	613.0
60.2	1.44238	1.2949	795.2	614.1
60.3	1.44260	1.2956	796.9	615.1
60.4	1.44283	1.2962	798.6	616.1
60.5	1.44305	1.2969	800.5	617.2
60.6	1.44328	1.2976	802.2	618.2
60.7	1.44351	1.2981	803.9	619.3

60.8	1.44374	1.2986	805.5	620.3
60.9	1.44397	1.2991	807.1	621.3
61.0	1.44419	1.2996	808.7	622.3
61.1	1.44442	1.3002	810.5	623.4
61.2	1.44465	1.3009	812.3	624.4
61.3	1.44488	1.3016	814.2	625.5
61.4	1.44511	1.3022	815.8	626.5
61.5	1.44534	1.3029	817.7	627.6
61.6	1.44557	1.3036	819.4	628.6
61.7	1.44580	1.3042	821.3	629.7
61.8	1.44603	1.3049	823.0	630.7
61.9	1.44626	1.3056	824.8	631.7
62.0	1.44648	1.3062	826.6	632.8
62.1	1.44672	1.3068	828.3	633.8
62.2	1.44695	1.3075	830.0	634.8
62.3	1.44718	1.3080	831.8	635.9
62.4	1.44741	1.3085	833.4	636.9
62.5	1.44764	1.3090	835.1	638.0
62.6	1.44787	1.3095	836.8	639.0
62.7	1.44810	1.3101	838.5	640.0
62.8	1.44833	1.3108	840.2	641.0

62.9	1.44856	1.3115	842.1	642.1
63.0	1.44879	1.3121	843.8	643.1
63.1	1.44902	1.3128	845.7	644.2
63.2	1.44926	1.3135	847.5	645.2
63.3	1.44949	1.3141	849.3	646.3
63.4	1.44972	1.3148	851.1	647.3
63.5	1.44955	1.3155	853.0	648.4
63.6	1.45019	1.3161	854.7	649.4
63.7	1.45042	1.3168	856.5	650.4
63.8	1.45065	1.3175	858.4	651.5
63.9	1.45088	1.3180	860.0	652.5
64.0	1.45112	1.3185	861.6	653.5
64.1	1.45135	1.3190	863.4	654.6
64.2	1.45158	1.3195	865.1	655.6
64.3	1.45181	1.3201	866.9	656.7
64.4	1.45205	1.3208	868.7	657.7
64.5	1.45228	1.3215	870.6	658.8
64.6	1.45252	1.3221	872.3	659.8
64.7	1.45275	1.3228	874.1	660.8
64.8	1.45299	1.3235	876.0	661.9
64.9	1.45322	1.3241	877.8	662.9

65.0	1.45347	1.3248	879.7	664.0
65.1	1.45369	1.3255	881.5	665.0
65.2	1.45393	1.3261	883.2	666.0
65.3	1.45416	1.3268	885.0	667.0
65.4	1.45440	1.3275	886.9	668.1
65.5	1.45463	1.3281	888.8	669.2
65.6	1.45487	1.3288	890.6	670.2
65.7	1.45510	1.3295	892.4	671.2
65.8	1.45534	1.3301	894.2	672.3
65.9	1.45557	1.3308	896.0	673.3
66.0	1.45583	1.3315	898.0	674.4
66.1	1.45605	1.3320	899.6	675.4
66.2	1.45629	1.3325	901.3	676.4
66.3	1.45652	1.3330	903.1	677.5
66.4	1.45676	1.3335	904.8	678.5
66.5	1.45700	1.3341	906.7	679.6
66.6	1.45724	1.3348	908.5	680.6
66.7	1.45747	1.3355	910.4	681.7
66.8	1.45771	1.3361	912.2	682.7
66.9	1.45795	1.3367	913.9	683.7
67.0	1.45820	1.3374	915.9	684.8

67.1	1.45843	1.3380	917.6	685.8
67.2	1.45867	1.3387	919.6	686.9
67.3	1.45890	1.3395	921.4	687.9
67.4	1.45914	1.3400	923.1	688.9
67.5	1.45938	1.3407	925.1	690.0
67.6	1.45962	1.3415	927.0	691.0
67.7	1.45986	1.3420	928.8	692.1
67.8	1.46010	1.3427	930.6	693.1
67.9	1.46034	1.3434	932.6	694.2
68.0	1.46060	1.3440	934.4	695.2
68.1	1.46082	1.3447	936.2	696.2
68.2	1.46106	1.3454	938.0	697.2
68.3	1.46130	1.3460	939.9	698.3
68.4	1.46154	1.3466	941.8	699.4
68.5	1.46178	1.3473	943.7	700.4
68.6	1.46202	1.3479	945.4	701.4
68.7	1.46226	1.3486	947.4	702.5
68.8	1.46251	1.3493	949.2	703.5
68.9	1.46275	1.3499	951.1	704.6
69.0	1.46301	1.3506	953.0	705.6
69.1	1.46323	1.3513	954.8	706.6

69.2	1.46347	1.3519	956.7	707.7
69.3	1.46371	1.3526	958.6	708.7
69.4	1.46396	1.3533	960.6	709.8
69.5	1.46420	1.3539	962.4	710.8
69.6	1.46444	1.3546	964.3	711.9
69.7	1.46468	1.3553	966.2	712.9
69.8	1.46493	1.3560	968.2	714.0
69.9	1.46517	1.3566	970.0	715.0
70.0	1.46544	1.3573	971.8	716.0
70.1	1.46565	1.3579	973.8	717.1
70.2	1.46590	1.3586	975.6	718.1
70.3	1.46614	1.3593	977.6	719.2
70.4	1.46639	1.3599	979.4	720.2
70.5	1.46663	1.3606	981.3	721.2
70.6	1.46688	1.3613	983.3	722.3
70.7	1.46712	1.3619	985.2	723.4
70.8	1.46737	1.3626	987.1	724.4
70.9	1.46761	1.3633	988.9	725.4
71.0	1.46789	1.3639	990.9	726.5
71.1	1.46810	1.3646	992.8	727.5
71.2	1.46835	1.3653	994.8	728.6

71.3	1.46859	1.3659	996.6	729.6
71.4	1.46884	1.3665	998.5	730.7
71.5	1.46908	1.3672	1000.4	731.7
71.6	1.46933	1.3678	1002.2	732.7
71.7	1.46957	1.3685	1004.2	733.8
71.8	1.46982	1.3692	1006.1	734.8
71.9	1.47007	1.3698	1008.0	735.9
72.0	1.47036	1.3705	1009.9	736.9
72.1	1.47056	1.3712	1012.0	738.0
72.2	1.47081	1.3718	1013.8	739.0
72.3	1.47106	1.3725	1015.7	740.0
72.4	1.47131	1.3732	1017.7	741.1
72.5	1.47155	1.3738	1019.5	742.1
72.6	1.47180	1.3745	1021.5	743.2
72.7	1.47205	1.3752	1023.4	744.2
72.8	1.47230	1.3758	1025.4	745.3
72.9	1.47254	1.3765	1027.3	746.3
73.0	1.47284	1.3772	1029.3	747.4
73.1	1.47304	1.3778	1031.2	748.4
73.2	1.47329	1.3785	1033.2	749.5
73.3	1.47354	1.3792	1035.1	750.5

73.4	1.47379	1.3798	1037.1	751.6
73.5	1.47404	1.3805	1039.0	752.6
73.6	1.47429	1.3812	1040.9	753.6
73.7	1.47454	1.3818	1042.8	754.7
73.8	1.47479	1.3825	1044.8	755.7
73.9	1.47504	1.3832	1046.8	756.8
74.0	1.47534	1.3838	1048.6	757.8
74.1	1.47554	1.3845	1050.7	758.9
74.2	1.47579	1.3852	1052.6	759.9
74.3	1.47604	1.3858	1054.6	761.0
74.4	1.47629	1.3865	1056.5	762.0
74.5	1.47654	1.3871	1058.5	763.1
74.6	1.47679	1.3878	1060.4	764.1
74.7	1.47704	1.3885	1062.3	765.1
74.8	1.47730	1.3892	1064.4	766.2
74.9	1.47755	1.3898	1066.3	767.2
75.0	1.47785	1.3905	1068.3	768.3

Table 2 Correction of the Conventional Sugar Mass Titer as a Function of Temperature Mass Titer Measured in %

Température °C	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
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	RÉFÉRENCE												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

(N.B. : In the French original reproduced here, commas should be replaced with decimal points)

Table 3: Conductivity Corrections for Temperatures Other Than 20oC in µ siemens/cm-1										
Temperatures										
	20.2	20.4	20.26	20.8	21.0	21.2	21.4	21.6	21.8	22.0(1)

	19.8	19.6	19.4	19.2	19.0	18.8	18.6	18.4	18.2	18.0(2)
Conductivity										
0	0	0	0	0	0	0	0	0	0	0
50	0	0	1	1	1	1	1	2	2	2
100	0	1	1	2	2	3	3	3	4	4
150	1	1	2	3	3	4	5	5	6	7
200	1	2	3	3	4	5	6	7	8	9
250	1	2	3	4	6	7	8	9	10	11
300	1	3	4	5	7	8	9	11	12	13
350	1	3	5	6	8	9	11	12	14	15
400	2	3	5	7	9	11	12	14	16	18
450	2	3	6	8	10	12	14	16	18	20
500	2	4	7	9	11	13	15	18	20	22
550	2	5	7	10	12	14	17	19	22	24
600	3	5	8	11	13	16	18	21	24	26

(1) Subtract the correction
(2) Add the correction

[1] Modified by resolution OIV-OENO 419A-2011

[2] Modified by resolution OIV-OENO 419A-2011

[3] Modified by resolution OIV-OENO 419A-2011

[4] Modified by resolution OIV-OENO 419A-2011

[5] Modified by resolution OIV-OENO 419A-2011

[6] Modified by resolution OIV-OENO 419A-2011

[7] Modified by resolution OIV-OENO 419A-2011

[8] Modified by resolution OIV-OENO 419A-2011