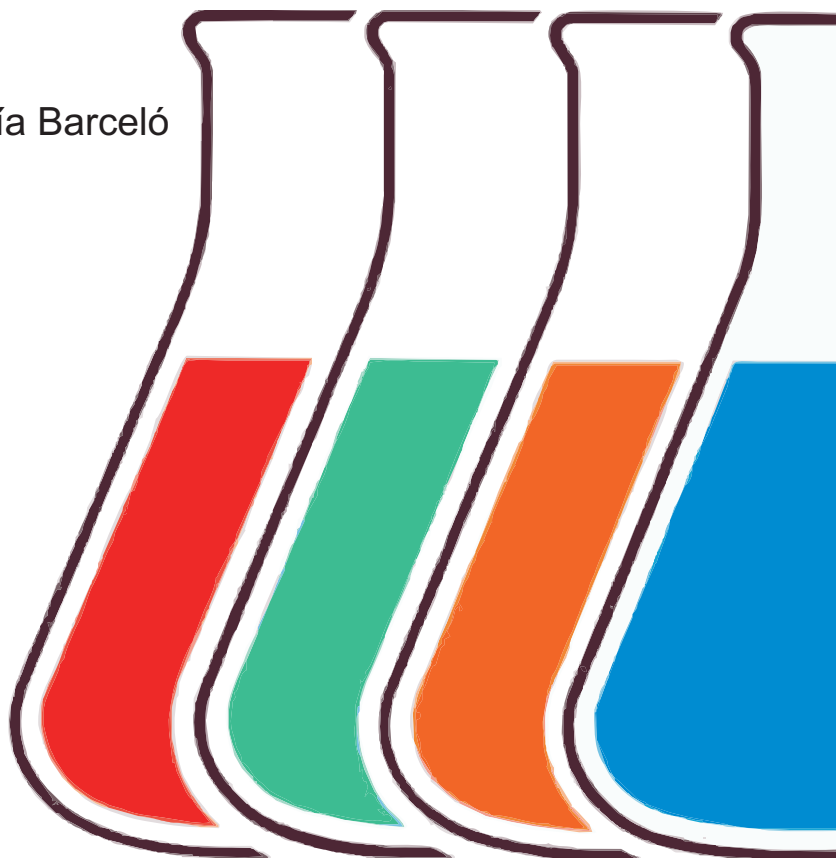


TECNICAS ANALITICAS PARA VINOS

Juan García Barceló



TECNICAS ANALITICAS PARA VINOS

TECNICAS ANALITICAS PARA VINOS

Juan García Barceló



Presentación

Todas las obras deben ser fruto de una experiencia, de un conocimiento y de una reflexión. En esta ocasión el lector tiene en sus manos un libro que reúne los tres requisitos apuntados. Además tiene como mérito que ha sido elaborado para servir a un profesional que hace de su quehacer diario un arte: el enólogo.

Con el interés, por consiguiente, que fuera útil en la bodega, este libro posee la ventaja de haber sido escrito por un enólogo que ha prestado servicio a un buen número de bodegas, que ha vivido vendimias y vinificaciones, y conocido la utilidad del control analítico sobre un producto en periodo de evolución.

Una obra como esta, no se escribe sin un buen bagaje de conocimientos. El autor que ha desarrollado sus conocimientos como técnico analista durante muchos años, en una Estación de Viticultura y Enología, concretamente en la de Vilafranca del Penedès, es claro ejemplo del servicio que estas instituciones, repartidas por todo el territorio español, ofrecen al sector vitivinícola.

En las Estaciones Enológicas la función de los técnicos, como el autor, no se circunscribe tan solo en realizar su trabajo de analista, debe también ejercer otras funciones: estar debidamente informado de las novedades analíticas, de los problemas que vive el sector y de sus posibles soluciones, transmitir la información a la institución, colaborar en los proyectos de investigación o experimentación y también, en la medida de lo posible, crear escuela.

Publicado por:
GAB
C/ Sant Jordi, 30 - Tel. (+34) 93 817 18 42 - Fax. (+34) 93 817 14 36
08734 MOJA-OLÈRDOLA (Barcelona)

1ª Edición - Octubre 1990
ISBN 84-404-7827-5
Depósito Legal B-36.850/90

Diseño:
NEXOS I. &S.

Fotocomposición y montaje:
Penedès Edicions, S.A. - Vilafranca del Penedès

Impreso por:
Romanyà/Valls, S.A. - Capellades

La personalidad del autor de este libro, le ha permitido cumplir con creces muchos de estos encargos tácitos, siendo además evidente su inquietud por ampliar conocimientos y transmitirlos, hecho que todos los que con él nos relacionamos podemos constatar.

Este minucioso trabajo es también consecuencia de la reflexión que conlleva el conocer, profundamente, a quién va dirigido. Es fácil localizar en la memoria del lector, tres obras de este autor que han formado parte de la biblioteca de numerosos laboratorios enológicos. Debe hacerse mención también que esta obra adquiere un nivel óptimo, en cuanto a metodologías actuales en análisis de control rutinario y de investigación. Es decir sirve al enólogo en su labor diaria y permite, a él y a otros estudiosos, penetrar en trabajos de control mucho más sofisticados y con técnicas más fiables.

Se recogen en esta obra, los métodos analíticos de la mayoría de compuestos que pueden formar parte de una caracterización enológica, tanto aquellos que se encuentran tras un proceso normal de vinificación como aquellos que son contaminantes, bien sean accidentales (estireno, residuos antocriptogámicos, etc.) o voluntarios (ácido salicílico, edulcorantes sintéticos, etc.).

No están contemplados todos los componentes del vino porque ello supondría entrar dentro del ámbito de la investigación, utilizando el análisis como finalidad más que como herramienta para el apoyo a la producción. Aunque la componente práctica de la obra resalta en cualquiera de sus páginas, hace despertar en las personas más receptivas, la inquietud hacia el mundo de la enología y les introduce en la complejidad de los productos vitivinícolas, cuyo máximo exponente es el vino, y siempre en constante evolución bioquímica.

Con relación a sus trabajos anteriores el autor en esta obra da entrada a métodos instrumentales: cromatografía de gases, espectrofotometría de absorción atómica, espectrofotometría visible y ultravioleta, etc. Es decir, aquellas metodologías que ya comienzan a estar presentes en laboratorios de grandes empresas y de todos los centros oficiales. Otras técnicas, incluida la cromatografía líquida de alta resolución, espectrofotometría de infrarrojo, etc. han sido soslayadas por el autor y límites de esta obra.

La situación política en la que está inmersa nuestra comunidad vitivinícola, hace que las referencias a los métodos oficiales, deban surgir de su misma organización. Por ello, todo tratado como éste, que

se precie de actual, debe recoger la metodología analítica de la Comunidad Económica Europea, cuyos métodos son en su mayor parte propuestos o aprobados por la Oficina Internacional de la Viña y el Vino (O.I.V.).

Como toda obra de éste carácter es difícil decir que un trabajo ha salido a la luz totalmente a gusto del autor y actualizado al máximo. Sin embargo, este libro aporta una de las recopilaciones más exhaustivas que sobre análisis de productos vinícolas se han realizado en los últimos tiempos. Es a mi modo de entender un buen trabajo, un buen servicio a la enología y a la analítica y un magnífico nexo de unión entre ambas.

Santiago Mínguez Sanz
Estación de Viticultura y Enología
Institut Català de la Vinya i el Vi

Vilafranca del Penedès, mayo de 1990.

Introducción

Este libro pretende ser una ayuda al analista de vinos, enólogo y bodeguero, al presentar una serie de metódicas que han sido escogidas, de las múltiples que existen, pensando en la exactitud y sencillez de trabajo. Se ha procurado evitar las técnicas instrumentales más complejas, como: Resonancia Magnética Nuclear, Espectrofotometría en Infrarrojo, Radioquímica y en ella se incluirían las técnicas con el carbono radioactivo (C_{14}), etc. A pesar de ello, es de esperar que cumpla con la idea en la que fue concebido este libro: ser útil.

La disposición de los capítulos se ha efectuado por orden alfabético de temas globales de análisis. En cada uno de ellos se describen varias técnicas analíticas que pueden ser aplicadas según las disponibilidades de equipo y personal.

En cuanto se refiere a la distribución de cada análisis, se ha procurado separar perfectamente el principio del método, los reactivos necesarios, la técnica operativa y los cálculos. En algunas técnicas, se ha introducido un apartado de comentarios, para ampliar el tema tratado. También se resumen algunas notas aclaratorias del autor, en el apartado de observaciones.

En lo referente a reactivos, los productos que se indican deberán ser de la calidad: reactivo para análisis. Cuando se hace referencia al agua, para diluciones u otras aplicaciones, siempre se refiere a: agua destilada.

Todos los volúmenes que deben medirse con exactitud, en el libro se expresan con dos decimales, por ejemplo: 10.00 mL.

Al final del texto, se recogen una serie de tablas que pueden ser de gran ayuda para el lector.

He de agradecer, sobremanera, a D. Santiago Minguez Sanz, Doctor Ingeniero Agrónomo, Director de la Estación de Viticultura y Enología de Vilafranca del Penedès, el aceptar presentar esta humilde aportación, a la ardua labor del analista.

El Autor

INDICE GENERAL

ACIDEZ	CAPITULO 1
ACIDOS	CAPITULO 2
ADITIVOS QUIMICOS	CAPITULO 3
ALCOHOLES	CAPITULO 4
AZUCARES	CAPITULO 5
CARACTERISTICAS CROMATICAS	CAPITULO 6
COMPUESTOS CARBONILICOS	CAPITULO 7
COMPUESTOS FENOLICOS	CAPITULO 8
COMPUESTOS NITROGENADOS	CAPITULO 9
ESTERES	CAPITULO 10
GASES	CAPITULO 11
METALES	CAPITULO 12
OTROS COMPUESTOS	CAPITULO 13
REGLAS ENOQUIMICAS	CAPITULO 14
SOLIDOS SOLUBLES	CAPITULO 15
UNIDADES INTERNACIONALES	CAPITULO 16
PESTICIDAS Y FUNGICIDAS	CAPITULO 17
TABLAS	

TABLAS

TABLA I	5
TABLA II	6
TABLA III	8
TABLA IV	9
TABLA V	10
TABLA VI	13
TABLA VII	14
TABLA VIII	15
TABLA IX	16
TABLA X	17
TABLA XI	18
TABLA XII	19
TABLA XIII	20
TABLA XIV	21
TABLA XV	23

TABLA I

Valores de acidez volátil para el método García-Tena

Probeta 3.2 mL Real	mL gastados	Probeta 5.1 mL Extraña	Probeta 3.2 mL Real	mL gastados	Probeta 5.1 mL Extraña
0.11	0.3	0.04	0.99	2.7	0.33
0.15	0.4	0.05	1.02	2.8	0.34
0.18	0.5	0.06	1.06	2.9	0.35
0.22	0.6	0.07	1.10	3.0	0.37
0.26	0.7	0.09	1.13	3.1	0.38
0.29	0.8	0.10	1.17	3.2	0.39
0.33	0.9	0.11	1.21	3.3	0.40
0.37	1.0	0.12	1.24	3.4	0.41
0.40	1.1	0.13	1.28	3.5	0.43
0.44	1.2	0.15	1.32	3.6	0.44
0.48	1.3	0.16	1.35	3.7	0.45
0.51	1.4	0.17	1.39	3.8	0.46
0.55	1.5	0.18	1.43	3.9	0.48
0.59	1.6	0.20	1.46	4.0	0.49
0.62	1.7	0.21	1.50	4.1	0.50
0.66	1.8	0.22	1.54	4.2	0.51
0.70	1.9	0.23	1.57	4.3	0.52
0.73	2.0	0.24	1.61	4.4	0.54
0.77	2.1	0.26	1.65	4.5	0.55
0.81	2.2	0.27	1.68	4.6	0.56
0.84	2.3	0.28	1.72	4.7	0.57
0.88	2.4	0.29	1.76	4.8	0.59
0.91	2.5	0.30	1.79	4.9	0.60
0.95	2.6	0.32	1.83	5.0	0.61

TABLA III

Análisis del 2,3-butanodiol.
Correcciones a efectuar para vinos dulces.

Butanodiol g/L	Azúcar en g/L							
	10	20	30	40	50	60	70	80
0-0.2	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035
0.3	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
0.4	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
0.5	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02
0.6	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
0.7	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01
0.8	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	-0.00	-0.00
0.9	-0.02	-0.02	-0.01	-0.01	-0.00	-0.00	+0.01	+0.01
1.0	-0.02	-0.01	0.00	0.00	+0.01	+0.01	+0.01	+0.02
1.1	-0.01	-0.01	0.00	0.00	+0.01	+0.02	+0.02	+0.03
1.2	-0.01	-0.01	0.00	+0.01	+0.02	+0.03	+0.03	+0.04
1.3	-0.01	0.00	+0.01	+0.02	+0.03	+0.04	+0.05	+0.05
1.4	0.00	+0.01	+0.02	+0.03	+0.04	+0.05	+0.06	+0.07
1.5	0.00	+0.01	+0.02	+0.04	+0.05	+0.06	+0.07	+0.08
1.6	+0.01	+0.02	+0.03	+0.05	+0.06	+0.07	+0.09	+0.10
1.7	+0.01	+0.03	+0.04	+0.06	+0.07	+0.09	+0.10	+0.12
1.8	+0.02	+0.03	+0.05	+0.07	+0.09	+0.10	+0.12	+0.13
1.9	+0.02	+0.04	+0.06	+0.08	+0.10	+0.12	+0.14	+0.15
2.0	+0.02	+0.05	+0.07	+0.10	+0.12	+0.14	+0.15	+0.17

Butanodiol g/L	Azúcar en g/L						
	90	100	110	120	130	140	150
0-0.2	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035	-0.035
0.3	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
0.4	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.22
0.5	-0.02	-0.02	-0.02	-0.01	-0.01	-0.02	-0.01
0.6	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00
0.7	-0.01	-0.01	0.00	0.00	0.00	0.00	+0.01
0.8	0.00	0.00	0.00	+0.01	+0.01	+0.01	+0.02
0.9	+0.01	+0.01	+0.01	+0.02	+0.02	+0.03	+0.03
1.0	+0.02	+0.03	+0.03	+0.03	+0.03	+0.04	+0.05
1.1	+0.04	+0.04	+0.04	+0.05	+0.05	+0.06	+0.07
1.2	+0.05	+0.05	+0.05	+0.06	+0.07	+0.07	+0.08
1.3	+0.06	+0.07	+0.07	+0.08	+0.09	+0.09	+0.10
1.4	+0.08	+0.09	+0.09	+0.10	+0.11	+0.11	+0.12
1.5	+0.09	+0.10	+0.11	+0.12	+0.13	+0.13	+0.14
1.6	+0.11	+0.12	+0.13	+0.14	+0.15	+0.16	+0.17
1.7	+0.13	+0.14	+0.15	+0.16	+0.17	+0.18	+0.19
1.8	+0.15	+0.16	+0.18	+0.19	+0.20	+0.21	+0.22
1.9	+0.17	+0.18	+0.20	+0.21	+0.23	+0.24	+0.25
2.0	+0.19	+0.20	+0.22	+0.24	+0.26	+0.27	+0.28

TABLA IV

Correspondencia entre el volumen de tiosulfato 0.05 M: (n'-n) y la cantidad de azúcares reductores en mg.

mL tiosulfato	Azúcares (mg)	Dif	mL tiosulfato	Azúcares (mg)	Dif.
1	2.4	2.4	13	33.0	2.7
2	4.8	2.4	14	35.7	2.8
3	7.2	2.5	15	38.5	2.8
4	9.7	2.5	16	41.3	2.9
5	12.2	2.5	17	44.2	2.9
6	14.7	2.6	18	47.1	2.9
7	17.2	2.6	19	50.0	3.0
8	19.8	2.6	20	53.0	3.0
9	22.4	2.6	21	56.0	3.1
10	25.0	2.6	22	59.1	3.1
11	27.6	2.7	23	62.2	
12	30.3	2.7			

TABLA V

Transformación de absorbancias en transmitancias.

% trans.	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
0		3.00	2.70	2.52	2.40	2.30	2.22	2.15	2.10	2.05
1	2.00	1.96	1.92	1.89	1.85	1.82	1.80	1.77	1.74	1.72
2	1.70	1.68	1.66	1.64	1.62	1.60	1.59	1.57	1.55	1.54
3	1.52	1.51	1.50	1.48	1.47	1.46	1.44	1.43	1.42	1.41
4	1.40	1.39	1.38	1.37	1.36	1.35	1.34	1.33	1.32	1.31
5	1.30	1.29	1.28	1.28	1.27	1.26	1.25	1.24	1.24	1.23
6	1.22	1.21	1.21	1.20	1.19	1.19	1.18	1.17	1.17	1.16
7	1.15	1.15	1.14	1.14	1.13	1.13	1.12	1.11	1.11	1.10
8	1.10	1.09	1.09	1.08	1.08	1.07	1.07	1.06	1.06	1.05
9	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.01	1.01	1.00
10	1.00	1.00	0.99	0.99	0.98	0.98	0.97	0.97	0.97	0.96
11	0.96	0.95	0.95	0.95	0.94	0.94	0.93	0.93	0.93	0.92
12	0.92	0.92	0.91	0.91	0.91	0.90	0.90	0.90	0.89	0.89
13	0.89	0.88	0.88	0.88	0.87	0.87	0.87	0.86	0.86	0.86
14	0.85	0.85	0.85	0.84	0.84	0.84	0.84	0.83	0.83	0.83
15	0.82	0.82	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80
16	0.80	0.79	0.79	0.79	0.78	0.78	0.78	0.78	0.77	0.77
17	0.77	0.77	0.76	0.76	0.76	0.76	0.75	0.75	0.75	0.75
18	0.74	0.74	0.74	0.74	0.73	0.73	0.73	0.73	0.73	0.72
19	0.72	0.72	0.72	0.71	0.71	0.71	0.71	0.71	0.70	0.70
20	0.70	0.70	0.69	0.69	0.69	0.69	0.69	0.68	0.68	0.68
21	0.68	0.68	0.67	0.67	0.67	0.67	0.67	0.66	0.66	0.66
22	0.66	0.66	0.65	0.65	0.65	0.65	0.65	0.64	0.64	0.64
23	0.64	0.64	0.63	0.63	0.63	0.63	0.63	0.63	0.62	0.62
24	0.62	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.60	0.60
25	0.60	0.60	0.60	0.60	0.59	0.59	0.59	0.59	0.59	0.59
26	0.58	0.58	0.58	0.58	0.58	0.58	0.57	0.57	0.57	0.57
27	0.57	0.57	0.57	0.57	0.56	0.56	0.56	0.56	0.56	0.56
28	0.55	0.55	0.55	0.55	0.55	0.54	0.54	0.54	0.54	0.54
29	0.54	0.54	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.52
30	0.52	0.52	0.52	0.52	0.52	0.52	0.51	0.51	0.51	0.51
31	0.51	0.51	0.51	0.50	0.50	0.50	0.50	0.50	0.50	0.50
32	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.48	0.48
33	0.48	0.48	0.48	0.48	0.48	0.47	0.47	0.47	0.47	0.47
34	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46	0.46	0.46
35	0.46	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.44

Sigue

TABLA V (continuación)

% trans.	.0	.1	.2	.3	.4	.5	.6	.7	.8
35	0.46	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
36	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.43
37	0.43	0.43	0.43	0.43	0.43	0.43	0.42	0.42	0.42
38	0.42	0.42	0.42	0.42	0.42	0.41	0.41	0.41	0.41
39	0.41	0.41	0.41	0.41	0.40	0.40	0.40	0.40	0.40
40	0.40	0.40	0.40	0.40	0.39	0.39	0.39	0.39	0.39
41	0.39	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38
42	0.38	0.38	0.38	0.37	0.37	0.37	0.37	0.37	0.37
43	0.37	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.36
44	0.36	0.36	0.35	0.35	0.35	0.35	0.35	0.35	0.35
45	0.35	0.35	0.34	0.34	0.34	0.34	0.34	0.34	0.34
46	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33
47	0.33	0.33	0.33	0.32	0.32	0.32	0.32	0.32	0.32
48	0.32	0.32	0.32	0.32	0.32	0.31	0.31	0.31	0.31
49	0.31	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30
50	0.30	0.30	0.30	0.30	0.30	0.30	0.29	0.29	0.29
51	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
52	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
53	0.28	0.28	0.27	0.27	0.27	0.27	0.27	0.27	0.27
54	0.27	0.27	0.27	0.27	0.26	0.26	0.26	0.26	0.26
55	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.25	0.25
56	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
57	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
58	0.24	0.24	0.24	0.23	0.23	0.23	0.23	0.23	0.23
59	0.23	0.23	0.23	0.23	0.23	0.23	0.22	0.22	0.22
60	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
61	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
62	0.21	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20
63	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.19
64	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
65	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.18
66	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.17
67	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
68	0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16
69	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
70	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15

Sigue

TABLA V (continuación)

% trans.	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
70	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
71	0.15	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.14	0.14
72	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
73	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.13	0.13
74	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
75	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
76	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11
77	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
78	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10
79	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
80	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09
81	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
82	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
83	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
84	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
85	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
86	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
87	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
88	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
89	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
90	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
91	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
92	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03
93	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
94	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02
95	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
96	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
97	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
98	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLA VI

Concentración de saturación de oxígeno en vino y mezclas hidroalcohólicas a 20 °C y 760 mm presión.

Alcohol (vol %)	Oxígeno (mg/L)
0	9.2
5	8.5
10	8.3
11.2 (vino)	8.25
15	8.2
20	8.1
20.5 (vino)	7.8

Concentración de oxígeno (mg/L) a la presión atmosférica a distintas temperaturas y porcentajes de alcohol y agua.

Alcohol (% v/v)	Temperatura °C						
	0	5	10	15	20	25	30
0	14.6	12.8	11.3	10.15	9.2	8.4	7.7
10	12.6	11.3	10.1	9.2	8.3	7.7	7.2
20	11.7	10.6	9.6	8.9	8.1	7.5	7.1

TABLA VII

Relación de la presión Pa a 20 °C y la presión P1 a la temperatura t °C

t °C	$\frac{Pa_{20}}{Pa_t}$	t °C	$\frac{Pa_{20}}{Pa_t}$	t °C	$\frac{Pa_{20}}{Pa_t}$
-5	2.44	9	1.50	23	0.90
-4	2.36	10	1.44	24	0.87
-3	2.29	11	1.39	25	0.84
-2	2.21	12	1.34	26	0.81
1	2.14	13	1.29	27	0.78
0	2.07	14	1.24	28	0.75
1	2.00	15	1.20	29	0.72
2	1.93	16	1.16	30	0.70
3	1.86	17	1.11	31	0.68
4	1.80	18	1.07	32	0.66
5	1.73	19	1.03	33	0.64
6	1.67	20	1.00	34	0.62
7	1.61	21	0.97	35	0.60
8	1.55	22	0.93		

TABLA VIII
Coeficientes Halphen

Alcohol	Coeficiente	Alcohol	Coeficiente
9.0	0.530	11.5	0.355
9.1	0.523	11.6	0.348
9.2	0.516	11.7	0.341
9.3	0.509	11.8	0.334
9.4	0.502	11.9	0.327
9.5	0.495	12.0	0.320
9.6	0.488	12.1	0.313
9.7	0.481	12.2	0.306
9.8	0.474	12.3	0.299
9.9	0.467	12.4	0.292
10.0	0.460	12.5	0.285
10.1	0.453	12.6	0.278
10.2	0.446	12.7	0.271
10.3	0.439	12.8	0.264
10.4	0.432	12.9	0.257
10.5	0.425	13.0	0.250
10.6	0.418	13.1	0.248
10.7	0.411	13.2	0.236
10.8	0.404	13.3	0.229
10.9	0.397	13.4	0.222
11.0	0.390	13.5	0.215
11.1	0.383		
11.2	0.376		
11.3	0.369		
11.4	0.362		

TABLA IX
Reglas Blarez.

% Alcohol	Acidez fija mínima	Suma alcohol acidez fija mínima	Relación alcohol acidez fija máxima	% Alcohol	Acidez fija mínima	Suma alcohol acidez fija mínima	Relación alcohol acidez fija máxima
14.0	2.50	16.50	5.60	11.0	3.00	14.00	3.66
13.9	2.51	16.41	5.54	10.9	3.05	13.95	3.56
13.8	2.52	16.32	5.48	10.8	3.10	13.90	3.47
13.7	2.53	16.23	5.42	10.7	3.15	13.85	3.38
13.6	2.54	16.14	5.36	10.6	3.20	13.80	3.29
13.5	2.55	16.05	5.30	10.5	3.25	13.75	3.20
13.4	2.56	15.96	5.24	10.4	3.30	13.70	3.14
13.3	2.57	15.87	5.18	10.3	3.35	13.65	3.07
13.2	2.58	15.78	5.12	10.2	3.40	13.60	3.00
13.1	2.59	15.69	5.06	10.1	3.45	13.55	2.93
13.0	2.60	15.60	5.00	10.0	3.50	13.50	2.86
12.9	2.62	15.52	4.92	9.9	3.55	13.45	2.80
12.8	2.64	15.44	4.84	9.8	3.60	13.40	2.73
12.7	2.66	15.36	4.76	9.7	3.65	13.35	2.66
12.6	2.68	15.28	4.68	9.6	3.70	13.30	2.59
12.5	2.70	15.20	4.60	9.5	3.75	13.25	2.53
12.4	2.72	15.12	4.52	9.4	3.80	13.20	2.47
12.3	2.74	15.04	4.48	9.3	3.85	13.15	2.41
12.2	2.76	14.96	4.42	9.2	3.90	13.10	2.36
12.1	2.78	14.88	4.36	9.1	3.95	13.05	2.31
12.0	2.80	14.80	4.30	9.0	4.00	13.00	2.25
11.9	2.82	14.72	4.22	8.9	4.05	12.95	2.20
11.8	2.84	14.64	4.14	8.8	4.10	12.90	2.15
11.7	2.86	14.56	4.06	8.7	4.15	12.85	2.10
11.6	2.88	14.48	3.98	8.6	4.20	12.80	2.05
11.5	2.90	14.40	3.90	8.5	4.25	12.75	2.00
11.4	2.92	14.32	3.85	8.4	4.30	12.70	1.95
11.3	2.94	14.24	3.80	8.3	4.35	12.65	1.90
11.2	2.96	14.16	3.75	8.2	4.40	12.60	1.85
11.1	2.98	14.08	3.70	8.1	4.45	12.55	1.80
				8.0	4.50	12.50	1.77

TABLA X

Levulosa %	Glucosa %	P	Coeficiente de corrección	Relación: $\frac{\text{Glucosa}}{\text{Levulosa}}$
		α		
100	0	1.15	0.006	0.111
90	10	1.36	0.007	0.250
80	20	1.67	0.008	0.429
70	30	2.16	0.009	0.449
69	31	2.23	0.010	0.470
68	32	2.30	0.011	0.492
67	33	2.37	0.011	0.510
66	34	2.45	0.011	0.538
65	35	2.54	0.012	0.587
65	35	2.54	0.012	0.587
64	36	2.63	0.012	0.587
63	37	2.72	0.012	0.610
62	38	2.79	0.012	0.639
61	39	2.90	0.012	0.666
60	40	3.06	0.012	0.690
59	41	3.20	0.012	0.690
56	42	3.34	0.013	0.720
57	43	3.67	0.013	0.750
56	44	3.86	0.013	0.780
55	45	4.08	0.013	0.818
54	46	4.31	0.013	0.850
53	47	4.58	0.014	0.886
52	48	4.88	0.014	0.960
51	49	5.23	0.014	1.000
49	51	5.63	0.015	1.049
48	52	6.09	0.016	1.088
47	53	6.64	0.018	1.127
46	54	7.29	0.020	1.174
45	55	8.03	0.022	1.222
44	56	9.09	0.024	1.272
43	57	10.36	0.028	1.325
42	58	12.04	0.032	1.380
41	59	14.38	0.036	1.440
40	60	17.85	0.042	1.500
35	65	17.85	0.042	1.850

TABLA XI

Factor F para multiplicar la masa del agua contenida en el picnómetro pyrex a t °C y calcular el volumen del picnómetro a 20 °C.

t °C	F	t °C	F	t °C	F	t °C	F	t °C	F	t °C	F	t °C	F
10.0	1,000398	13.0	1,000691	16.0	1,001097	19.0	1,001608	22.0	1,002215	25.0	1,002916	28.0	1,003704
10.1	1,000406	13.1	1,000703	16.1	1,001113	19.1	1,001627	22.1	1,002238	25.1	1,002941	28.1	1,003731
10.2	1,000414	13.2	1,000714	16.2	1,001128	19.2	1,001646	22.2	1,002260	25.2	1,002966	28.2	1,003759
10.3	1,000422	13.3	1,000726	16.3	1,001144	19.3	1,001655	22.3	1,002282	25.3	1,002990	28.3	1,003787
10.4	1,000430	13.4	1,000738	16.4	1,001159	19.4	1,001684	22.4	1,002304	25.4	1,003015	28.4	1,003815
10.5	1,000439	13.5	1,000752	16.5	1,001175	19.5	1,001703	22.5	1,002326	25.5	1,003041	28.5	1,003843
10.6	1,000447	13.6	1,000764	16.6	1,001191	19.6	1,001722	22.6	1,002349	25.6	1,003066	28.6	1,003871
10.7	1,000456	13.7	1,000777	16.7	1,001207	19.7	1,001741	22.7	1,002372	25.7	1,003092	28.7	1,003899
10.8	1,000465	13.8	1,000789	16.8	1,001223	19.8	1,001761	22.8	1,002394	25.8	1,003117	28.8	1,003928
10.9	1,000474	13.9	1,000803	16.9	1,001239	19.9	1,001780	22.9	1,002417	25.9	1,003143	28.9	1,003956
11.0	1,000483	14.0	1,000816	17.0	1,001257	20.0	1,001800	23.0	1,002439	26.0	1,003168	29.0	1,003984
11.1	1,000492	14.1	1,000829	17.1	1,001273	20.1	1,001819	23.1	1,002462	26.1	1,003194	29.1	1,004013
11.2	1,000501	14.2	1,000842	17.2	1,001290	20.2	1,001839	23.2	1,002485	26.2	1,003222	29.2	1,004042
11.3	1,000511	14.3	1,000855	17.3	1,001306	20.3	1,001859	23.3	1,002508	26.3	1,003247	29.3	1,004071
11.4	1,000520	14.4	1,000868	17.4	1,001323	20.4	1,001880	23.4	1,002531	26.4	1,003273	29.4	1,004099

Segue

TABLA XI (continuación)

t °C	F	t °C	F	t °C	F	t °C	F	t °C	F	t °C	F	t °C	F
11.5	1,000530	14.5	1,000882	17.5	1,001340	20.5	1,001900	23.5	1,002555	26.5	1,003299	29.5	1,004128
11.6	1,000540	14.6	1,000895	17.6	1,001357	20.6	1,001920	23.6	1,002578	26.6	1,003326	29.6	1,004158
11.7	1,000550	14.7	1,000909	17.7	1,001374	20.7	1,001941	23.7	1,002602	26.7	1,003352	29.7	1,004187
11.8	1,000560	14.8	1,000923	17.8	1,001391	20.8	1,001961	23.8	1,002625	26.8	1,003379	29.8	1,004216
11.9	1,000570	14.9	1,000937	17.9	1,001409	20.9	1,001982	23.9	1,002649	26.9	1,003405	29.9	1,004245
12.0	1,000580	15.0	1,000951	18.0	1,001427	21.0	1,002002	24.0	1,002672	27.0	1,003432	30.0	1,004275
12.1	1,000591	15.1	1,000965	18.1	1,001445	21.1	1,002023	24.1	1,002696	27.1	1,003458		
12.2	1,000601	15.2	1,000979	18.2	1,001462	21.2	1,002044	24.2	1,002720	27.2	1,003485		
12.3	1,000612	15.3	1,000993	18.3	1,001480	21.3	1,002065	24.3	1,002745	27.3	1,003513		
12.4	1,000623	15.4	1,001008	18.4	1,001498	21.4	1,002086	24.4	1,002769	27.4	1,003540		
12.5	1,000634	15.5	1,001022	18.5	1,001516	21.5	1,002107	24.5	1,002793	27.5	1,003567		
12.6	1,000645	15.6	1,001037	18.6	1,001534	21.6	1,002129	24.6	1,002817	27.6	1,003594		
12.7	1,000656	15.7	1,001052	18.7	1,001552	21.7	1,002151	24.7	1,002842	27.7	1,003621		
12.8	1,000668	15.8	1,001067	18.8	1,001570	21.8	1,002172	24.8	1,002866	27.8	1,003649		
12.9	1,000679	15.9	1,001082	18.9	1,001589	21.9	1,002194	24.9	1,002891	27.9	1,003676		

TABLA XII

Correcciones a efectuar en vinos secos medidos con areómetro o picnómetro de vidrio ordinario, para referirlo a 20 °C.

		Alcohol %																										
		0	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27			
Temperatura °C	10	1.45	1.51	1.55	1.58	1.64	1.70	1.78	1.88	1.98	2.09	2.21	2.34	2.47	2.60	2.75	2.90	3.06	3.22	3.39	3.57	3.75	3.93	4.12	4.31			
	11	1.35	1.40	1.43	1.47	1.52	1.58	1.65	1.73	1.83	1.93	2.03	2.15	2.26	2.38	2.51	2.65	2.78	2.93	3.08	3.24	3.40	3.57	3.73	3.90			
	12	1.24	1.28	1.31	1.34	1.39	1.44	1.50	1.58	1.66	1.75	1.84	1.94	2.04	2.15	2.26	2.38	2.51	2.63	2.77	2.91	3.05	3.19	3.34	3.49			
	13	1.12	1.16	1.18	1.21	1.25	1.30	1.35	1.42	1.49	1.56	1.64	1.73	1.82	1.91	2.01	2.11	2.22	2.33	2.45	2.57	2.69	2.81	2.95	3.07			
	14	0.99	1.03	1.05	1.07	1.11	1.14	1.19	1.24	1.31	1.37	1.44	1.52	1.59	1.67	1.75	1.84	1.93	2.03	2.13	2.23	2.33	2.44	2.55	2.66			
	15	0.86	0.89	0.90	0.92	0.95	0.98	1.02	1.07	1.12	1.17	1.23	1.29	1.35	1.42	1.49	1.56	1.63	1.71	1.80	1.88	1.96	2.05	2.14	2.23			
	16	0.71	0.73	0.74	0.76	0.78	0.81	0.84	0.87	0.91	0.96	0.99	1.05	1.10	1.15	1.21	1.27	1.33	1.39	1.45	1.52	1.59	1.66	1.73	1.80			
	17	0.55	0.57	0.57	0.59	0.60	0.62	0.65	0.67	0.70	0.74	0.77	0.81	0.84	0.88	0.92	0.96	1.01	1.05	1.11	1.15	1.20	1.26	1.31	1.36			
	18	0.38	0.39	0.39	0.40	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.62	0.65	0.68	0.71	0.74	0.78	0.81	0.85	0.88	0.91			
	19	0.19	0.20	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.44	0.46			
20																												

Segue

TABLA XII (continuación)

		Alcohol %																										
		0	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27			
Temperatura °C	20																											
	21	0.21	0.22	0.22	0.23	0.23	0.24	0.25	0.25	0.26	0.27	0.29	0.29	0.31	0.32	0.34	0.35	0.36	0.38	0.39	0.41	0.43	0.44	0.46	0.48			
	22	0.43	0.45	0.45	0.46	0.47	0.49	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73	0.77	0.80	0.83	0.86	0.89	0.93	0.96			
	23	0.67	0.69	0.70	0.71	0.72	0.74	0.77	0.79	0.82	0.85	0.88	0.91	0.95	0.99	1.03	1.07	1.12	1.16	1.21	1.25	1.30	1.35	1.40	1.45			
	24	0.91	0.93	0.95	0.97	0.99	1.01	1.04	1.07	1.11	1.15	1.20	1.24	1.29	1.34	1.39	1.45	1.50	1.56	1.62	1.69	1.76	1.82	1.88	1.95			
	25	1.16	1.19	1.21	1.23	1.26	1.29	1.33	1.37	1.42	1.47	1.52	1.57	1.63	1.70	1.76	1.83	1.90	1.97	2.05	2.13	2.21	2.29	2.37	2.45			
	26	1.42	1.46	1.49	1.51	1.54	1.58	1.62	1.67	1.73	1.79	1.85	1.92	1.99	2.07	2.14	2.22	2.31	2.40	2.49	2.58	2.67	2.77	2.86	2.96			
	27	1.69	1.74	1.77	1.80	1.83	1.88	1.93	1.98	2.05	2.12	2.20	2.27	2.35	2.44	2.53	2.63	2.72	2.82	2.93	3.04	3.14	3.25	3.37	3.48			
	28	1.97	2.03	2.06	2.09	2.14	2.19	2.24	2.31	2.38	2.46	2.55	2.63	2.73	2.83	2.93	3.03	3.14	3.26	3.38	3.50	3.62	3.75	3.85	4.00			
	29	2.26	2.33	2.37	2.40	2.45	2.50	2.57	2.64	2.73	2.82	2.91	2.99	3.11	3.22	3.34	3.45	3.58	3.70	3.84	3.97	4.11	4.25	4.39	4.54			
30	2.56	2.64	2.67	2.72	2.77	2.83	2.90	2.98	3.08	3.18	3.28	3.38	3.50	3.62	3.75	3.88	4.02	4.16	4.30	4.46	4.61	4.76	4.92	5.07				

TABLA XIII

Correcciones a efectuar en mostos o mostos concentrados, medidos con areómetro o picnómetro de vidrio ordinario, para referirlo a 20 °C.

Temperatura °C	Masa volúmica																					
	1.05	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.18	1.20	1.22	1.24	1.26	1.28	1.30	1.32	1.34	1.36
10	2.17	2.34	2.52	2.68	2.85	2.99	3.16	3.29	3.44	3.58	3.73	3.86	4.13	4.36	4.60	4.82	5.02	5.25	5.39	5.56	5.73	5.87
11	2.00	2.16	2.29	2.44	2.59	2.73	2.86	2.99	3.12	3.24	3.37	3.48	3.71	3.94	4.15	4.33	4.52	4.69	4.85	5.01	5.15	5.29
12	1.81	1.95	2.08	2.21	2.34	2.47	2.58	2.70	2.82	2.92	3.03	3.14	3.35	3.55	3.72	3.90	4.07	4.23	4.37	4.52	4.64	4.77
13	1.62	1.74	1.85	1.96	2.07	2.17	2.28	2.38	2.48	2.59	2.68	2.77	2.94	3.11	3.28	3.44	3.54	3.72	3.86	3.99	4.12	4.24
14	1.44	1.54	1.64	1.73	1.82	1.92	2.00	2.08	2.17	2.25	2.34	2.42	2.57	2.73	2.86	2.99	3.12	3.24	3.35	3.46	3.57	3.65
15	1.21	1.29	1.37	1.45	1.53	1.60	1.68	1.75	1.82	1.89	1.97	2.03	2.16	2.28	2.40	2.51	2.61	2.71	2.80	2.89	2.94	3.01
16	1.00	1.06	1.12	1.19	1.25	1.31	1.37	1.43	1.49	1.54	1.60	1.65	1.75	1.84	1.94	2.02	2.09	2.17	2.23	2.30	2.36	2.42
17	0.76	0.82	0.86	0.91	0.96	1.00	1.05	1.09	1.14	1.18	1.22	1.25	1.32	1.39	1.46	1.52	1.57	1.63	1.67	1.71	1.75	1.79
18	0.53	0.56	0.59	0.63	0.65	0.69	0.72	0.74	0.77	0.80	0.82	0.85	0.90	0.95	0.99	1.02	1.06	1.09	1.13	1.16	1.18	1.20
19	0.28	0.30	0.31	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.43	0.43	0.46	0.48	0.50	0.52	0.54	0.55	0.57	0.58	0.59	0.60
20																						

Sigue

TABLA XIII (continuación)

Temperatura °C	Masa volúmica																					
	1.05	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.18	1.20	1.22	1.24	1.26	1.28	1.30	1.32	1.34	1.36
20																						
21	0.28	0.29	0.31	0.33	0.34	0.36	0.37	0.39	0.40	0.41	0.43	0.44	0.46	0.48	0.51	0.54	0.56	0.57	0.58	0.59	0.60	0.60
22	0.55	0.58	0.61	0.64	0.67	0.70	0.73	0.76	0.78	0.81	0.84	0.87	0.93	0.97	1.02	1.06	1.09	1.12	1.15	1.17	1.19	1.19
23	0.65	0.90	0.95	0.99	1.04	1.06	1.12	1.16	1.21	1.25	1.29	1.32	1.39	1.46	1.52	1.58	1.62	1.68	1.72	1.75	1.77	1.79
24	1.15	1.19	1.25	1.31	1.37	1.43	1.48	1.54	1.60	1.65	1.71	1.76	1.86	1.95	2.04	2.11	2.17	2.23	2.29	2.33	2.35	2.37
25	1.44	1.52	1.59	1.67	1.74	1.81	1.88	1.95	2.02	2.09	2.16	2.22	2.34	2.45	2.55	2.64	2.74	2.81	2.87	2.90	2.92	2.96
26	1.76	1.84	1.93	2.02	2.10	2.18	2.25	2.33	2.41	2.49	2.56	2.64	2.78	2.91	3.03	3.15	3.26	3.37	3.47	3.55	3.62	3.68
27	2.07	2.16	2.26	2.36	2.46	2.56	2.65	2.74	2.83	2.91	3.00	3.07	3.24	3.39	3.55	3.69	3.82	3.94	4.04	4.14	4.23	4.30
28	2.39	2.51	2.63	2.74	2.85	2.96	3.06	3.16	3.28	3.38	3.48	3.57	3.75	3.92	4.08	4.23	4.37	4.51	4.62	4.73	4.80	4.86
29	2.74	2.86	2.97	3.09	3.22	3.34	3.46	3.57	3.69	3.80	3.90	4.00	4.20	4.39	4.58	4.74	4.90	5.05	5.19	5.31	5.40	5.48
30	3.06	3.21	3.35	3.50	3.63	3.77	3.91	4.02	4.15	4.28	4.40	4.52	4.75	4.96	5.16	5.35	5.52	5.67	5.79	5.91	5.99	6.04

TABLA XIV

Correcciones a efectuar en vinos de 13% o más de alcohol, medidos con areómetro o picnómetro de vidrio ordinario, para referirlo a 20 °C.

Temperatura °C	Vinos de 13% vol							Vinos de 15% vol							Vinos de 17% vol							
	Masa volúmica							Masa volúmica							Masa volúmica							
	1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.000	1.020	1.040	1.060	1.080	1.100	1.120	
10	2.24	2.98	2.93	3.27	3.59	3.89	4.18	2.51	2.85	3.20	3.54	3.86	4.02	4.46	2.81	3.15	3.50	3.84	4.15	4.45	4.74	
11	2.06	2.37	2.69	2.97	3.26	3.53	3.78	2.31	2.61	2.93	3.21	3.51	3.64	4.02	2.57	2.89	3.20	3.49	3.77	4.03	4.28	
12	1.87	2.14	2.42	2.67	2.94	3.17	3.40	2.09	2.36	2.64	2.90	3.16	3.27	3.61	2.32	2.60	2.87	3.13	3.39	3.63	3.84	
13	1.69	1.93	2.14	2.37	2.59	2.80	3.00	1.88	2.12	2.34	2.56	2.78	2.88	3.19	2.09	2.33	2.55	2.77	2.98	3.19	3.39	
14	1.49	1.70	1.90	2.09	2.27	2.44	2.61	1.67	1.86	2.06	2.25	2.45	2.51	2.77	1.83	2.03	2.23	2.42	2.61	2.77	2.94	
15	1.25	1.42	1.59	1.75	1.90	2.05	2.19	1.39	1.56	1.72	1.88	2.03	2.11	2.32	1.54	1.71	1.87	2.03	2.18	2.32	2.47	
16	1.03	1.17	1.30	1.43	1.55	1.67	1.78	1.06	1.27	1.40	1.53	1.65	1.77	1.88	1.25	1.39	1.52	1.65	1.77	1.89	2.00	
17	0.80	0.90	1.00	1.09	1.17	1.27	1.36	0.87	0.98	1.08	1.17	1.26	1.35	1.44	0.96	1.06	1.16	1.26	1.35	1.44	1.52	
18	0.54	0.61	0.68	0.75	0.81	0.86	0.92	0.60	0.66	0.73	0.80	0.86	0.91	0.97	0.66	0.72	0.79	0.86	0.92	0.97	1.03	
19	0.29	0.33	0.36	0.39	0.42	0.45	0.48	0.32	0.36	0.39	0.42	0.45	0.48	0.51	0.35	0.38	0.41	0.45	0.48	0.51	0.53	
20																						

TABLA XIV (continuación)

Sigue

Temperatura °C	Vinos de 13% vol							Vinos de 15% vol							Vinos de 17% vol							
	Masa volúmica							Masa volúmica							Masa volúmica							
	1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.000	1.020	1.040	1.060	1.080	1.100	1.120	
20																						
21	0.29	0.32	0.35	0.39	0.42	0.45	0.47	0.32	0.35	0.38	0.42	0.45	0.48	0.50	0.34	0.38	0.41	0.44	0.47	0.50	0.53	
22	0.57	0.64	0.70	0.76	0.82	0.88	0.93	0.63	0.69	0.75	0.81	0.87	0.93	0.98	0.68	0.75	0.81	0.87	0.93	0.99	1.04	
23	0.89	0.98	1.08	1.17	1.26	1.34	1.43	0.97	1.06	1.16	1.25	1.34	1.42	1.51	1.06	1.15	1.25	1.34	1.42	1.51	1.59	
24	1.22	1.34	1.44	1.56	1.68	1.79	1.90	1.32	1.44	1.54	1.66	1.78	1.89	2.00	1.43	1.55	1.65	1.77	1.89	2.00	2.11	
25	1.61	1.68	1.83	1.98	2.12	2.26	2.40	1.66	1.81	1.96	2.11	2.25	2.39	2.52	1.80	1.94	2.09	2.24	2.39	2.52	2.66	
26	1.87	2.05	2.22	2.40	2.56	2.71	2.87	2.02	2.20	2.37	2.54	2.70	2.85	3.01	2.18	2.36	2.53	2.71	2.86	3.02	3.17	
27	2.21	2.42	2.60	2.80	3.00	3.18	3.35	2.39	2.59	2.78	2.98	3.17	3.35	3.52	2.58	2.78	2.97	3.17	3.36	3.54	3.71	
28	2.56	2.80	3.02	3.25	3.47	3.67	3.89	2.75	2.89	3.22	3.44	3.66	3.86	4.07	2.97	3.21	3.44	3.66	3.88	4.09	4.30	
29	2.93	3.19	3.43	3.66	3.91	4.14	4.37	3.16	3.41	3.65	3.89	4.13	4.36	4.59	3.40	3.66	3.89	4.13	4.38	4.61	4.82	
30	3.31	3.57	3.86	4.15	4.41	4.66	4.92	3.55	3.81	4.10	4.38	4.66	4.90	5.16	3.82	4.08	4.37	4.65	4.93	5.17	5.42	

Sigue

TABLA XIV (continuación)

Temperatura °C		Vinos de 19% vol						Vinos de 21 % vol							
		Masa volúmica						Masa volúmica							
		1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.000	1.020	1.040	1.060	1.080	1.100	1.120
10		3.14	3.48	3.83	4.17	4.48	4.78	5.07	3.50	3.84	4.19	4.52	4.83	5.12	5.41
11		2.87	3.18	3.49	3.78	4.06	4.32	4.57	3.18	3.49	3.80	4.09	4.34	4.63	4.88
12		2.58	2.86	3.13	3.39	3.65	3.88	4.10	2.86	3.13	3.41	3.67	3.92	4.15	4.37
13		2.31	2.55	2.77	2.99	3.20	3.41	3.61	2.56	2.79	3.01	3.23	3.44	3.65	3.85
14		2.03	2.23	2.43	2.61	2.80	2.96	3.13	2.23	2.43	2.63	2.81	3.00	3.16	3.33
15		1.69	1.86	2.02	2.18	2.33	2.48	2.62	1.86	2.03	2.19	2.35	2.50	2.65	2.80
16		1.38	1.52	1.65	1.78	1.90	2.02	2.13	1.51	1.65	1.78	1.91	2.03	2.15	2.26
17		1.06	1.16	1.26	1.35	1.44	1.53	1.62	1.15	1.25	1.35	1.45	1.54	1.63	1.71
18		0.73	0.79	0.85	0.92	0.98	1.03	1.09	0.79	0.85	0.92	0.98	1.05	1.10	1.15
19		0.38	0.41	0.44	0.48	0.51	0.52	0.56	0.41	0.44	0.47	0.51	0.54	0.57	0.59
20															

Sigue

TABLA XIV (continuación)

Temperatura °C		Vinos de 19% vol						Vinos de 21 % vol							
		Masa volúmica						Masa volúmica							
		1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.000	1.020	1.040	1.060	1.080	1.100	1.120
20															
21		0.37	0.41	0.44	0.47	0.50	0.53	0.56	0.41	0.44	0.47	0.51	0.54	0.57	0.59
22		0.75	0.81	0.87	0.93	0.99	1.04	1.10	0.81	0.88	0.94	1.00	1.06	1.10	1.17
23		1.15	1.30	1.34	1.43	1.51	1.60	1.68	1.25	1.34	1.44	1.63	1.61	1.70	1.78
24		1.55	1.67	1.77	1.89	2.00	2.11	2.23	1.68	1.80	1.90	2.02	2.13	2.25	2.36
25		1.95	2.09	2.24	2.39	2.53	2.67	2.71	2.11	2.25	2.40	2.55	2.69	2.83	2.97
26		2.36	2.54	2.71	2.89	3.04	3.20	3.35	2.55	2.73	2.90	3.07	3.22	3.38	3.54
27		2.79	2.99	3.18	3.38	3.57	3.75	3.92	3.91	3.20	3.40	3.59	3.78	3.96	4.13
28		3.20	3.44	3.66	3.89	4.11	4.32	4.53	3.46	3.69	3.93	4.15	4.36	4.58	4.77
29		3.66	3.92	4.15	4.40	4.64	4.87	5.08	3.95	4.20	4.43	4.68	4.92	5.15	5.36
30		4.11	4.37	4.66	4.94	5.22	5.46	5.71	4.42	4.68	4.97	5.25	5.53	5.77	6.02

TABLA XV

Corrección para el refractómetro a temperatura diferente de 20 °C

Temperatura °C	Sacarosa en gramos por 100 g del producto									
	5	10	15	20	30	40	50	60	70	75
Restar										
15	0,25	0,27	0,31	0,31	0,34	0,35	0,36	0,37	0,36	0,36
16	0,21	0,23	0,27	0,27	0,29	0,31	0,31	0,32	0,31	0,23
17	0,16	0,18	0,20	0,20	0,22	0,23	0,23	0,23	0,20	0,17
18	0,11	0,12	0,14	0,15	0,16	0,16	0,15	0,12	0,12	0,09
19	0,06	0,07	0,08	0,08	0,08	0,09	0,09	0,08	0,07	0,05
Sumar										
21	0,06	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07
22	0,12	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14
23	0,18	0,20	0,20	0,21	0,21	0,21	0,21	0,21	0,22	0,22
24	0,24	0,26	0,26	0,27	0,28	0,28	0,28	0,28	0,29	0,29
25	0,30	0,32	0,32	0,34	0,36	0,36	0,36	0,36	0,36	0,37

Las diferencias de temperatura respecto a 20 °C no deben ser mayores de ±5 °C

TABLAS

TABLA XVI

TABLA XVI

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
10.0	1,34781	1,0390	82.3	79.2	4.89
10.1	1,34798	1,0394	83.4	80.2	4.95
10.2	1,34814	1,0398	84.5	81.3	5.02
10.3	1,34830	1,0402	85.6	82.2	5.09
10.4	1,34845	1,0406	86.6	83.2	5.14
10.5	1,34860	1,0410	87.6	84.1	5.20
10.6	1,34875	1,0414	88.6	85.1	5.26
10.7	1,34890	1,0419	89.7	86.1	5.33
10.8	1,34906	1,0423	90.8	87.1	5.39
10.9	1,34921	1,0427	91.8	88.1	5.45
11.0	1,34936	1,0431	92.9	89.1	5.52
11.1	1,34952	1,0435	94.0	90.0	5.58
11.2	1,34968	1,0439	95.0	91.0	5.64
11.3	1,34984	1,0443	96.1	92.0	5.71
11.4	1,34999	1,0447	97.1	92.9	5.77
11.5	1,35015	1,0452	98.2	94.0	5.83
11.6	1,35031	1,0456	99.3	95.0	5.90
11.7	1,35046	1,0460	100.3	95.9	5.96
11.8	1,35062	1,0464	101.4	96.9	6.02
11.9	1,35077	1,0468	102.5	97.9	6.09
12.0	1,35092	1,0473	103.6	98.9	6.15
12.1	1,35108	1,0477	104.7	99.9	6.22
12.2	1,35124	1,0481	105.7	100.8	6.28
12.3	1,35140	1,0485	106.8	101.9	6.35
12.4	1,35156	1,0489	107.9	102.9	6.41
12.5	1,35172	1,0494	109.0	103.8	6.47
12.6	1,35187	1,0498	110.0	104.8	6.53
12.7	1,35203	1,0502	111.1	105.8	6.60
12.8	1,35219	1,0506	112.2	106.8	6.66
12.9	1,35234	1,0510	113.2	107.8	6.73
13.0	1,35249	1,0514	114.3	108.7	6.79
13.1	1,35266	1,0519	115.4	109.7	6.86
13.2	1,35282	1,0523	116.5	110.7	6.92
13.3	1,35298	1,0527	117.6	111.7	6.99
13.4	1,35313	1,0531	118.6	112.6	7.05

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
13.5	1,35329	1,0536	119.7	113.6	7.11
13.6	1,35345	1,0540	120.8	114.8	7.18
13.7	1,35360	1,0544	121.8	115.6	7.24
13.8	1,35376	1,0548	122.9	116.5	7.30
13.9	1,35391	1,0552	124.0	117.5	7.37
14.0	1,35407	1,0557	125.1	118.5	7.43
14.1	1,35424	1,0561	126.2	119.5	7.50
14.2	1,35440	1,0565	127.3	120.5	7.56
14.3	1,35456	1,0569	128.4	121.5	7.63
14.4	1,35472	1,0574	129.5	122.5	7.69
14.5	1,35488	1,0578	130.6	123.4	7.76
14.6	1,35503	1,0582	131.6	124.4	7.82
14.7	1,35519	1,0586	132.7	125.4	7.88
14.8	1,35535	1,0591	133.8	126.3	7.95
14.9	1,35551	1,0595	134.9	127.3	8.01
15.0	1,35567	1,0599	136.0	128.3	8.08
15.1	1,35583	1,0603	137.1	129.3	8.15
15.2	1,35599	1,0608	138.2	130.3	8.21
15.3	1,35615	1,0612	139.3	131.3	8.27
15.4	1,35631	1,0616	140.4	132.3	8.34
15.5	1,35648	1,0621	141.5	133.2	8.41
15.6	1,35664	1,0625	142.6	134.2	8.47
15.7	1,35680	1,0629	143.7	135.2	8.54
15.8	1,35696	1,0633	144.8	136.2	8.60
15.9	1,35739	1,0638	145.9	137.2	8.67
16.0	1,35742	1,0642	147.0	138.1	8.73
16.1	1,35751	1,0646	148.1	139.1	8.80
16.2	1,35761	1,0651	149.2	140.1	8.86
16.3	1,35776	1,0655	150.3	141.1	8.93
16.4	1,35793	1,0660	151.5	142.1	9.00
16.5	1,35809	1,0664	152.6	143.1	9.06
16.6	1,35825	1,0668	153.7	144.1	9.13
16.7	1,35842	1,0672	154.8	145.0	9.20
16.8	1,35858	1,0677	155.9	146.0	9.26
16.9	1,35874	1,0681	157.0	147.0	9.33

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volumétrica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
17.0	1,35890	1,0685	158.1	148.0	9.39
17.1	1,35907	1,0690	159.3	149.0	9.46
17.2	1,35923	1,0694	160.4	150.0	9.53
17.3	1,35939	1,0699	161.5	151.0	9.59
17.4	1,35955	1,0703	162.6	151.9	9.66
17.5	1,35972	1,0707	163.7	152.9	9.73
17.6	1,35988	1,0711	164.8	153.9	9.79
17.7	1,36004	1,0716	165.9	154.8	9.86
17.8	1,36020	1,0720	167.0	155.8	9.92
17.9	1,36036	1,0724	168.1	156.8	9.99
18.0	1,36053	1,0729	169.3	157.8	10.06
18.1	1,36070	1,0733	170.4	158.8	10.12
18.2	1,36086	1,0738	171.5	159.7	10.19
18.3	1,36102	1,0742	172.6	160.7	10.25
18.4	1,36119	1,0746	173.7	161.6	10.32
18.5	1,36136	1,0751	174.9	162.6	10.39
18.6	1,36152	1,0755	176.0	163.6	10.46
18.7	1,36169	1,0760	177.2	164.6	10.53
18.8	1,36185	1,0764	178.3	165.6	10.59
18.9	1,36201	1,0768	179.4	166.6	10.66
19.0	1,36217	1,0773	180.5	167.6	10.72
19.1	1,36234	1,0777	181.7	168.6	10.80
19.2	1,36251	1,0782	182.8	169.5	10.86
19.3	1,36267	1,0786	183.9	170.5	10.93
19.4	1,36284	1,0791	185.1	171.5	11.00
19.5	1,36301	1,0795	186.3	172.5	11.07
19.6	1,36318	1,0800	187.4	173.5	11.13
19.7	1,36335	1,0804	188.6	174.5	11.21
19.8	1,36351	1,0809	189.7	175.5	11.27
19.9	1,36367	1,0813	190.8	176.5	11.34
20.0	1,36383	1,0817	191.9	177.4	11.40
20.1	1,36400	1,0822	193.1	178.4	11.47
20.2	1,36417	1,0826	194.2	179.4	11.54
20.3	1,36434	1,0831	195.3	180.4	11.60
20.4	1,36451	1,0835	196.5	181.4	11.67

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volumétrica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
20.5	1,36468	1,0840	197.7	182.3	11.75
20.6	1,36484	1,0844	198.8	183.3	11.81
20.7	1,36501	1,0849	200.0	184.3	11.88
20.8	1,36518	1,0853	201.1	185.3	11.96
20.9	1,36534	1,0857	202.2	186.2	12.01
21.0	1,36550	1,0862	203.3	187.2	12.08
21.1	1,36568	1,0866	204.5	188.2	12.15
21.2	1,36585	1,0871	205.7	189.2	12.22
21.3	1,36601	1,0875	206.8	190.2	12.29
21.4	1,36618	1,0880	207.9	191.1	12.35
21.5	1,36635	1,0884	209.1	192.1	12.42
21.6	1,36652	1,0889	210.3	193.1	12.49
21.7	1,36669	1,0893	211.4	194.1	12.56
21.8	1,36685	1,0897	212.5	195.0	12.63
21.9	1,36702	1,0902	213.6	196.0	12.69
22.0	1,36719	1,0906	214.8	196.9	12.76
22.1	1,36736	1,0911	216.0	198.0	12.83
22.2	1,36753	1,0916	217.2	199.0	12.90
22.3	1,36770	1,0920	218.3	199.9	12.97
22.4	1,36787	1,0925	219.5	200.9	13.04
22.5	1,36804	1,0929	220.6	201.8	13.11
22.6	1,36820	1,0933	221.7	202.8	13.17
22.7	1,36837	1,0938	222.9	203.8	13.24
22.8	1,36854	1,0943	224.1	204.8	13.31
22.9	1,36871	1,0947	225.2	205.8	13.38
23.0	1,36888	1,0952	226.4	206.7	13.45
23.1	1,36905	1,0956	227.6	207.7	13.52
23.2	1,36922	1,0961	228.7	208.7	13.59
23.3	1,36939	1,0965	229.9	209.7	13.66
23.4	1,36956	1,0970	231.1	210.7	13.73
23.5	1,36973	1,0975	232.3	211.6	13.80
23.6	1,35991	1,0979	233.4	212.6	13.87
23.7	1,37008	1,0984	234.6	213.6	13.94
23.8	1,37025	1,0988	235.8	214.6	14.01
23.9	1,37042	1,0993	237.0	215.6	14.08

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volumétrica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
24.0	1,37059	1,0998	238.2	216.6	14.15
24.1	1,37076	1,1007	239.3	217.4	14.22
24.2	1,37093	1,1011	240.3	218.2	14.28
24.3	1,37110	1,1016	241.6	219.4	14.35
24.4	1,37128	1,1022	243.0	220.5	14.44
24.5	1,37145	1,1026	244.0	221.3	14.50
24.6	1,37162	1,1030	245.0	222.1	14.56
24.7	1,37180	1,1035	246.4	223.2	14.64
24.8	1,37197	1,1041	247.7	224.4	14.72
24.9	1,37214	1,1045	248.7	225.2	14.78
25.0	1,37232	1,1049	249.7	226.0	14.84
25.1	1,37249	1,1053	250.7	226.8	14.90
25.2	1,37266	1,1057	251.7	227.6	14.96
25.3	1,37283	1,1062	253.0	228.7	15.03
25.4	1,37300	1,1068	254.4	229.9	15.11
25.5	1,37317	1,1072	255.4	230.7	15.17
25.6	1,37335	1,1076	256.4	231.5	15.23
25.7	1,37353	1,1081	257.8	232.6	15.32
25.8	1,37370	1,1087	259.1	233.7	15.39
25.9	1,37387	1,1091	260.1	234.5	15.45
26.0	1,37405	1,1095	261.1	235.3	15.51
26.1	1,37423	1,1100	262.5	236.4	15.60
26.2	1,37440	1,1106	263.8	237.5	15.67
26.3	1,37457	1,1110	264.8	238.3	15.73
26.4	1,37475	1,1114	265.8	239.2	15.79
26.5	1,37493	1,1119	267.2	240.3	15.88
26.6	1,37510	1,1125	268.5	241.4	15.95
26.7	1,37528	1,1129	269.5	242.2	16.01
26.8	1,37545	1,1133	270.5	243.0	16.07
26.9	1,37562	1,1138	271.8	244.1	16.15
27.0	1,37580	1,1144	273.2	245.2	16.23
27.1	1,37598	1,1148	274.2	246.0	16.29
27.2	1,37615	1,1152	275.2	246.8	16.35
27.3	1,37632	1,1157	276.5	247.9	16.43
27.4	1,37650	1,1163	277.9	249.0	16.51

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volumétrica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
27.5	1,37667	1,1167	278.9	249.8	16.57
27.6	1,37685	1,1171	279.9	250.6	16.63
27.7	1,37703	1,1176	281.3	251.6	16.71
27.8	1,37721	1,1182	282.6	252.7	16.79
27.9	1,37739	1,1186	283.6	253.5	16.85
28.0	1,37757	1,1190	284.6	254.3	16.91
28.1	1,37775	1,1195	286.0	255.4	16.99
28.2	1,37793	1,1201	287.3	256.5	17.07
28.3	1,37810	1,1205	288.3	257.3	17.13
28.4	1,37828	1,1209	289.3	258.1	17.19
28.5	1,37846	1,1214	290.7	259.2	17.27
28.6	1,37863	1,1220	292.0	260.3	17.35
28.7	1,37881	1,1224	293.0	261.0	17.41
28.8	1,37699	1,1228	294.0	261.8	17.47
28.9	1,37917	1,1233	295.3	262.9	17.55
29.0	1,37935	1,1239	296.7	264.0	17.63
29.1	1,37953	1,1244	298.1	265.1	17.71
29.2	1,37971	1,1250	299.4	266.1	17.79
29.3	1,37988	1,1254	300.4	266,9	17.85
29.4	1,38006	1,1258	301.4	267.7	17.91
29.5	1,38024	1,1263	302.8	268.8	17.99
29.6	1,38042	1,1269	304.1	269.9	18.07
29.7	1,38060	1,1273	305.1	270.6	18.13
29.8	1,38078	1,1277	306.1	271.4	18.19
29.9	1,38096	1,1282	307.4	272.6	18.26
30.0	1,38114	1,1288	308.8	273.6	18.35
30.1	1,38132	1,1293	310.0	274.5	18.42
30.2	1,38150	1,1298	311.2	275.5	18.49
30.3	1,38168	1,1302	312.4	276.4	18.56
30.4	1,38188	1,1307	313.6	277.3	18.63
30.5	1,38204	1,1312	314.8	278.3	18.70
30.6	1,38222	1,1317	316.0	279.2	18.77
30.7	1,38240	1,1322	317.2	280.2	18.85
30.8	1,38258	1,1327	318.4	281.1	18.92
30.9	1,38275	1,1332	319.6	282.0	18.99

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
31.0	1,38294	1,1336	320.8	283.0	19.06
31.1	1,38312	1,1341	322.0	283.9	19.13
31.2	1,38330	1,1346	323.2	284.9	19.20
31.3	1,38349	1,1351	324.4	285.8	19.27
31.4	1,38367	1,1356	325.6	286.8	19.35
31.5	1,38385	1,1361	326.8	287.7	19.42
31.6	1,38403	1,1366	328.1	288.6	19.49
31.7	1,38421	1,1371	329.3	289.6	19.56
31.8	1,38440	1,1376	330.5	290.5	19.64
31.9	1,38458	1,1380	331.7	291.5	19.71
32.0	1,38476	1,1385	332.9	292.4	19.78
32.1	1,38494	1,1391	334.2	293.4	19.86
32.2	1,38513	1,1396	335.5	294.4	19.93
32.3	1,38531	1,1401	336.7	295.4	20.00
32.4	1,38550	1,1406	338.0	296.4	20.08
32.5	1,38568	1,1411	339.3	297.3	20.16
32.6	1,38586	1,1416	340.6	298.3	20.24
32.7	1,38605	1,1422	341.9	299.3	20.31
32.8	1,38623	1,1427	343.1	300.3	20.38
32.9	1,38642	1,1432	344.4	301.3	20.46
33.0	1,38660	1,1437	345.7	302.3	20.64
33.1	1,38678	1,1442	346.9	303.2	20.61
33.2	1,38697	1,1447	348.1	304.1	20.68
33.3	1,38715	1,1452	349.3	305.0	20.75
33.4	1,38734	1,1457	350.5	305.9	20.82
33.5	1,38753	1,1461	351.7	306.9	20.90
33.6	1,38771	1,1466	352.9	307.8	20.97
33.7	1,38790	1,1471	354.1	308.7	21.04
33.8	1,38808	1,1476	355.3	309.6	21.11
33.9	1,38827	1,1481	356.5	310.5	21.18
34.0	1,38845	1,1486	357.7	311.4	21.25
34.1	1,38864	1,1491	359.0	312.4	21.33
34.2	1,38882	1,1496	360.3	313.4	21.41
34.3	1,38901	1,1501	361.5	314.3	21.48
34.4	1,38919	1,1506	362.8	315.3	21.55

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
34.5	1,38938	1,1512	364.1	316.3	21.63
34.6	1,38957	1,1517	365.4	317.3	21.71
34.7	1,38975	1,1522	366.7	318.2	21.79
34.8	1,38994	1,1527	367.9	319.2	21.86
34.9	1,39012	1,1532	369.2	320.2	21.94
35.0	1,39031	1,1537	370.5	321.1	22.01
35.1	1,39050	1,1543	371.8	322.1	22.09
35.2	1,39069	1,1548	373.0	323.0	22.16
35.3	1,39087	1,1553	374.3	324.0	22.24
35.4	1,39106	1,1558	375.6	325.0	22.32
35.5	1,39125	1,1563	376.9	325.9	22.39
35.6	1,39144	1,1568	378.1	326.9	22.46
35.7	1,39163	1,1573	379.4	327.8	22.54
35.8	1,39181	1,1579	380.7	328.8	22.62
35.9	1,39200	1,1584	381.9	329.7	22.69
36.0	1,39219	1,1589	383.2	330.7	22.77
36.1	1,39238	1,1594	384.5	331.6	22.85
36.2	1,39257	1,1599	385.8	332.6	22.92
36.3	1,39276	1,1604	387.0	333.5	22.99
36.4	1,39295	1,1610	388.3	334.5	23.07
36.5	1,39314	1,1615	389.6	335.4	23.15
36.6	1,39332	1,1620	390.9	336.4	23.22
36.7	1,39351	1,1625	392.2	337.3	23.30
36.8	1,39370	1,1630	393.4	338.3	23.37
36.9	1,39389	1,1635	394.7	339.2	23.45
37.0	1,39408	1,1641	396.0	340.2	23.53
37.1	1,39427	1,1646	397.3	341.1	23.60
37.2	1,39446	1,1651	398.6	342.1	23.68
37.3	1,39465	1,1656	399.8	343.0	23.75
37.4	1,39484	1,1661	401.1	344.0	23.83
37.5	1,39504	1,1666	402.4	344.9	23.91
37.6	1,39523	1,1672	403.7	345.9	23.99
37.7	1,39542	1,1677	405.0	346.8	24.06
37.8	1,39561	1,1682	406.2	347.7	24.13
37.9	1,39580	1,1687	407.5	348.7	24.21

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volumica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
38.0	1,39599	1,1692	408.8	349.6	24.29
38.1	1,39618	1,1698	410.1	350.6	24.37
38.2	1,39637	1,1703	411.3	351.5	24.44
38.3	1,39657	1,1708	412.6	352.4	24.51
38.4	1,39676	1,1713	413.9	353.4	24.59
38.5	1,39695	1,1718	415.2	354.3	24.67
38.6	1,39714	1,1723	416.4	355.2	24.74
38.7	1,39733	1,1728	417.7	356.1	24.82
38.8	1,39753	1,1733	419.0	357.1	24.90
38.9	1,39772	1,1739	420.2	358.0	24.97
39.0	1,39791	1,1744	421.5	358.9	25.04
39.1	1,39810	1,1749	422.8	359.8	25.12
39.2	1,39830	1,1754	424.1	360.8	25.20
39.3	1,39849	1,1759	425.3	361.7	25.27
39.4	1,39869	1,1764	426.6	362.6	25.35
39.5	1,39888	1,1770	427.9	363.6	25.42
39.6	1,39907	1,1775	429.2	364.5	25.50
39.7	1,39927	1,1780	430.5	365.4	25.58
39.8	1,39946	1,1786	431.7	366.3	25.65
39.9	1,39966	1,1790	433.0	367.3	25.73
40.0	1,39985	1,1796	434.3	368.2	25.80
40.1	1,40004	1,1801	435.6	369.2	25.88
40.2	1,40024	1,1806	437.0	370.1	25.96
40.3	1,40043	1,1812	438.3	371.1	26.04
40.4	1,40063	1,1817	439.7	372.1	26.12
40.5	1,40083	1,1823	441.0	373.0	26.20
40.6	1,40102	1,1828	442.3	374.0	26.28
40.7	1,40122	1,1833	443.7	374.9	26.36
40.8	1,40141	1,1839	445.0	375.9	26.44
40.9	1,40161	1,1844	446.4	376.9	26.52
41.0	1,40180	1,1850	447.7	377.8	26.60
41.1	1,40200	1,1855	449.0	378.7	26.68
41.2	1,40219	1,1860	450.2	379.6	26.75
41.3	1,40239	1,1865	451.5	380.5	26.83
41.4	1,40259	1,1870	452.8	381.4	26.90

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volumica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
41.5	1,40279	1,1875	454.1	382.3	26.98
41.6	1,40298	1,1881	455.3	383.2	27.05
41.7	1,40318	1,1886	456.6	384.2	27.13
41.8	1,40338	1,1891	457.9	385.1	27.21
41.9	1,40357	1,1896	459.1	386.0	27.28
42.0	1,40377	1,1901	460.4	386.9	27.35
42.1	1,40397	1,1907	461.7	387.8	27.43
42.2	1,40417	1,1912	463.1	388.8	27.52
42.3	1,40436	1,1917	464.4	389.7	27.59
42.4	1,40456	1,1923	465.8	390,7	27.68
42.5	1,40476	1,1928	467.2	391.6	27.76
42.6	1,40496	1,1934	468.5	392.6	27.84
42.7	1,40516	1,1939	469.9	393.5	27.92
42.8	1,40535	1,1945	471.2	394.5	28.00
42.9	1,40555	1,1950	472.6	395.4	28.06
43.0	1,40575	1,1956	473.9	396.4	28.16
43.1	1,40595	1,1961	475.2	397.3	28.23
43.2	1,40615	1,1967	476.6	398.3	28.32
43.3	1,40635	1,1972	477.9	399.2	28.40
43.4	1,40655	1,1977	479.3	400.1	28.48
43.5	1,40675	1,1983	480.6	401.1	28.56
43.6	1,40695	1,1988	481.9	402.0	28.63
43.7	1,40715	1,1994	483,3	402.9	28.72
43.8	1,40735	1,1999	484.6	403.9	28.79
43.9	1,40755	1,2005	486.0	404.8	28.88
44.0	1,40775	1,2010	487.3	405.7	28.95
44.1	1,40795	1,2015	488.6	406.7	29.03
44.2	1,40815	1,2021	490.0	407.6	29.11
44.3	1,40636	1,2026	491.3	408.5	29.19
44.4	1,40856	1,2032	492.7	409.5	29.27
44.5	1,40876	1,2037	494.0	410.4	29.35
44.6	1,40896	1,2042	495.3	411.3	29.43
44.7	1,40916	1,2048	496.7	412.3	29.51
44.8	1,40937	1,2053	498.0	413.2	29.59
44.9	1,40957	1,2059	499.4	414.1	29.67

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
45.0	1,40977	1,2064	500.7	415.0	29.75
45.1	1,40997	1,2070	502.1	416.0	29.83
45.2	1,41018	1,2076	503.5	417.0	29.92
45.3	1,41038	1,2081	504.9	417.9	30.00
45.4	1,41058	1,2087	506.3	418.9	30.08
45.5	1,41079	1,2093	507.8	419.9	30.17
45.6	1,41099	1,2098	509.2	420.9	30.25
45.7	1,41119	1,2104	510.6	421.8	30.34
45.8	1,41139	1,2110	512.0	422.8	30.42
45.9	1,41160	1,2115	513.4	423.7	30.50
46.0	1,41180	1,2121	514.8	424.7	30.59
46.1	1,41200	1,2127	516.1	425.6	30.66
46.2	1,41221	1,2132	517.5	426.5	30.75
46.3	1,41241	1,2137	518.8	427.5	30.82
46.4	1,41262	1,2143	520.2	428.4	30.91
46.5	1,41282	1,2148	521.5	429.3	30.99
48.6	1,41302	1,2154	522.8	430.2	31.06
46.7	1,41323	1,2159	524.2	431.1	31.15
46.8	1,41343	1,2165	525.5	432.0	31.22
46.9	1,41364	1,2170	526.9	432.9	31.31
47.0	1,41384	1,2175	528.2	433.8	31.38
47.1	1,41405	1,2181	529.6	434.8	31.47
47.2	1,41425	1,2187	531.0	435.7	31.55
47.3	1,41446	1,2192	532.4	436.7	31.63
47.4	1,41486	1,2198	533.8	437.6	31.72
47.5	1,41487	1,2204	535.3	438.6	31.81
47.6	1,41508	1,2210	536.7	439.5	31.89
47.7	1,41528	1,2215	538.1	440.5	31.97
47.8	1,41549	1,2221	539.5	441.4	32.05
47.9	1,41569	1,2227	540.9	442.4	32.14
48.0	1,41590	1,2232	542.3	443.3	32.22
48.1	1,41611	1,2238	543.6	444.2	32.30
48.2	1,41632	1,2243	545.0	445.1	32.38
48.3	1,41652	1,2249	546.3	446.0	32.46
48.4	1,41673	1,2254	647.7	446.9	32.59

Segue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
48.5	1,41694	1,2260	549.1	447.8	32.63
48.6	1,41715	1,2265	550.4	448.7	32,7
48.7	1,41736	1,2271	551.8	449.7	32.79
48.8	1,41756	1,2276	553.1	450.6	32.86
48.9	1,41777	1,2282	554.5	451.4	32.95
49.0	1,41798	1,2287	555.8	452.3	33.02
49.1	1,41819	1,2293	557.2	453.3	33.11
49.2	1,41840	1,2298	558.6	454.2	33.19
49.3	1,41861	1,2304	560.0	455.1	33.27
49.4	1,41882	1,2310	561.4	456.1	33.36
49.5	1,41903	1,2315	562.8	457.0	33.44
49.6	1,41924	1,2321	564.2	457.9	33.52
49.7	1,41945	1,2327	565.6	458.8	33.61
49.8	1,41966	1,2332	567.0	459.8	33.69
49.9	1,41987	1,2338	568.4	460,7	33.77
50.0	1,42008	1,2344	569.8	461.6	33.86
50.1	1,42029	1,2349	571.2	462.5	33.94
50.2	1,42050	1,2355	572.6	463.5	34.02
50.3	1,42071	1,2361	574.0	464.4	34.10
50.4	1,42092	1,2366	575.4	465.3	34.19
50.5	1,42114	1,2372	576.9	466.2	34.28
50.6	1,42135	1,2378	578.3	467.2	34.36
50.7	1,42156	1,2384	579.7	468.1	34.44
50.8	1,42177	1,2389	581.1	469.0	34.53
50.9	1,42198	1,2395	582.5	469.9	34.61
51.0	1,42219	1,2401	583.9	470.9	34.69
51.1	1,42240	1,2407	585.4	471.8	34.78
51.2	1,42261	1,2413	586.9	472.8	34.87
51.3	1,42263	1,2419	588.3	473.8	34.95
51.4	1,42304	1,2425	589.8	474.7	35.04
51.5	1,42325	1,2431	591.3	475.7	35.13
51.6	1,42346	1,2437	592.8	476.6	35.22
51.7	1,42367	1,2443	594.3	477.6	35.31
51.8	1,42389	1,2449	595.7	478.6	35.39
51.9	1,42410	1,2455	597.2	479.5	34.48

Segue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
52.0	1,42431	1,2461	598.7	480.5	35.57
52.1	1,42452	1,2466	600.1	481.4	35.65
52.2	1,42474	1,2472	601.5	482.3	35.74
52.3	1,42495	1,2476	602.9	483.2	35.62
52.4	1,42517	1,2483	604.3	484.1	35.91
52.5	1,42538	1,2489	605.8	485.0	35.99
52.6	1,42559	1,2495	607.2	485.9	36.08
52.7	1,42561	1,2500	608.6	486.8	36.16
52.8	1,42602	1,2506	610.0	487.7	36.24
52.9	1,42624	1,2512	611.4	488.6	36.33
53.0	1,42645	1,2518	612.8	489.6	36.41
53.1	1,42666	1,2524	614.3	490.5	36.50
53.2	1,42686	1,2530	615.8	491.4	36.59
53.3	1,42707	1,2536	617.2	492.4	36.67
53.4	1,42727	1,2542	618.7	493.3	36.76
53.5	1,42748	1,2548	620.2	494.3	36.85
53.6	1,42769	1,2554	621.7	495.2	36.94
53.7	1,42789	1,2580	623.2	496.2	37.03
53.8	1,42810	1,2568	624.6	497.1	37.11
53.9	1,42830	1,2571	626.1	498.0	37.20
54.0	1,42851	1,2577	627.6	499.0	37.29
54.1	1,42874	1,2583	629.0	499.9	37.37
54.2	1,42897	1,2589	630.4	500.8	37.45
54.3	1,42919	1,2595	631.8	501.7	37,54
54.4	1,42942	1,2600	633.2	502.6	37,62
54.5	1,42965	1,2606	634.7	503.5	37.71
54.6	1,42988	1,2612	636.1	504.3	37.79
54.7	1,43011	1,2617	637.5	505.2	37.88
54.8	1,43033	1,2623	638.9	506.1	37.96
54.9	1,43056	1,2629	640.3	507.0	38.04
55.0	1,43079	1,2635	641.7	507.9	38.13
55.1	1,43101	1,2640	643.2	508.8	38.22
55.2	1,43123	1,2646	644,6	509.7	38.30
55.3	1,43145	1,2652	646.1	510.7	38.39
55.4	1,43167	1,2658	647.6	511.6	38.48

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
55.5	1,43189	1,2664	649.1	512.5	38.57
55.6	1,43210	1,2670	650.5	513.4	38.65
55.7	1,43232	1,2676	652.0	514.3	38.74
55.8	1,43254	1,2682	653.5	515.3	38.83
55.9	1,43276	1,2688	654.9	516.2	38.91
56.0	1,43298	1,2694	656.4	517,1	39.00
56.1	1,43320	1,2700	657.9	518.0	39.09
56.2	1,43342	1,2706	659.4	518.9	39.18
56.3	1,43364	1,2712	660.8	519.9	39,26
56.4	1,43386	1,2718	662.3	520.8	39.35
56.5	1,43409	1,2724	663.8	521.7	39.44
56.6	1,43431	1,2730	665.3	522.6	39.53
56.7	1,43453	1,2736	666.8	523.5	39.62
56.8	1,43475	1,2742	668.2	524.4	39.70
56.9	1,43497	1,2748	669.7	525.4	39.79
57.0	1,43519	1,2754	671.2	526.3	39.88
57.1	1,43541	1,2760	672.7	527.2	39.97
57.2	1,43563	1,2766	674.3	528.2	40.06
57.3	1,43586	1,2773	676.8	529.1	40.15
57.4	1,43608	1,2779	677.4	530.1	40.25
57.5	1,43630	1,2785	678.9	531.0	40.34
57.6	1,43652	1,2791	680.4	532.0	40.43
57.7	1,43674	1,2797	682.0	532.9	40.52
57.8	1,43697	1,2804	683.5	533.8	40.61
57.9	1,43719	1,2810	685.1	534.8	40.70
58.0	1,43741	1,2816	686.6	535.7	40.80
58.1	1,43763	1,2822	688.1	536.6	40.88
58.2	1,43786	1,2828	689.6	537.5	40.97
58.3	1,43808	1,2834	691.0	538.4	41.06
58.4	1,43831	1,2840	692.5	539.3	41.14
58.5	1,43854	1,2846	694.0	540.2	41.23
58.6	1,43876	1,2852	695.5	541.1	41.32
58.7	1,43899	1,2858	697.0	542.0	41.41
58.8	1,43921	1,2864	698.4	542.9	41.50
58.9	1,43944	1,2870	699.9	543.8	41.58

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
59.0	1,43966	1,2876	701.4	544.7	41.67
59.1	1,43989	1,2882	702.9	545.7	41.76
59.2	1,44011	1,2888	704.5	546.6	41.86
59.3	1,44034	1,2895	706.0	547.5	41.95
59.4	1,44056	1,2901	707.6	548.5	42.04
59.5	1,44079	1,2907	709.1	549.4	42.13
59.6	1,44102	1,2913	710.6	550.3	42.22
59.7	1,44124	1,2920	712.2	551.2	42.32
59.8	1,44147	1,2926	713.7	552.2	42.41
59.9	1,44169	1,2932	715.3	553.1	42.50
60.0	1,44192	1,2938	716.8	554.0	42.59
60.1	1,44215	1,2944	718.3	554.9	42.68
60.2	1,44237	1,2950	719.8	555.8	42.77
60.3	1,44260	1,2956	721.2	556.7	42.85
60.4	1,44283	1,2962	722.7	557.6	42.94
60.5	1,44306	1,2968	724.2	558.4	43.03
60.6	1,44328	1,2974	725.7	559.3	43.12
60.7	1,44351	1,2980	727.2	560.2	43.21
60.8	1,44374	1,2986	728.6	561.1	43.29
60.9	1,44396	1,2992	730.1	562.0	43.38
61.0	1,44419	1,2998	731.6	562.8	43.47
61.1	1,44442	1,3004	733.1	563.8	43.56
61.2	1,44465	1,3011	734.7	564.7	43.65
61.3	1,44488	1,3017	736.2	565.6	43.74
61.4	1,44511	1,3023	737.8	566.5	43.84
61.5	1,44533	1,3030	739.4	567.4	43.93
61.6	1,44556	1,3036	740.9	568.4	44.02
61.7	1,44579	1,3042	742.5	569.3	44.12
61.8	1,44602	1,3048	744.0	570.2	44.21
61.9	1,44625	1,3055	745.6	571.1	44.30
62.0	1,44648	1,3061	747.1	572.0	44.39
62.1	1,44671	1,3067	748.6	572.9	44.48
62.2	1,44694	1,3073	750.2	573.8	44.57
62.3	1,44717	1,3080	751.7	574.7	44.66
62.4	1,44740	1,3086	753.3	575.6	44.76

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
62.5	1,44764	1,3092	754.8	576.5	44.85
62.6	1,44787	1,3098	756.3	577.4	44.94
62.7	1,44810	1,3104	757.9	578.3	45.03
62.8	1,44833	1,3111	759.4	579.2	45.12
62.9	1,44856	1,3117	761.0	580.1	45.21
63.0	1,44879	1,3123	762.5	581.0	45.31
63.1	1,44902	1,3130	764.1	582.0	45.40
63.2	1,44926	1,3136	765.7	582.9	45.49
63.3	1,44949	1,3143	767.3	583.8	45.59
63.4	1,44972	1,3149	768.9	584.8	45.69
63.5	1,44996	1,3156	770.6	585.7	45.79
63.6	1,45019	1,3162	772.2	586.6	45.88
63.7	1,45042	1,3169	773.8	587.6	45.98
63.8	1,45065	1,3175	775.4	588.5	46.07
63.9	1,45089	1,3182	777.0	589.4	46,17
64.0	1,45112	1,3188	778.6	590.4	46.26
64.1	1,45135	1,3195	780.1	591.3	46.35
64.2	1,45159	1,3201	781.7	592.1	46.45
64.3	1,45163	1,3207	783.2	593.0	46.53
64.4	1,45206	1,3213	784.8	593.9	46.63
64.5	1,45230	1,3219	788.3	594.8	46,72
64.6	1,45253	1,3226	787.8	595.7	46.81
64.7	1,45276	1,3232	789.4	596.6	46.90
64.8	1,45300	1,3238	790.9	597.5	46.99
64.9	1,45324	1,3244	792.5	598.3	47.09
65.0	1,45347	1,3251	794.0	599.2	47.18
65.1	1,45371	1,3257	795.6	600.1	47.27
65.2	1,45394	1,3264	797.2	601.1	47.37
65.3	1,45418	1,3270	798.8	602.0	47,46
65.4	1,45441	1,3277	800.4	602.9	47,56
65.5	1,45465	1,3283	802.1	603.8	47.66
65.6	1,45489	1,3290	803.7	604.7	47.75
65.7	1,45512	1,3296	805.3	605.6	47.85
65.8	1,45536	1,3303	806.9	606.6	47.94
65.9	1,45559	1,3309	808.5	607.5	48.04

Sigue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
66.0	1,45583	1,3316	810.1	608.4	48.13
66.1	1,45607	1,3322	811.6	609.3	48.22
66.2	1,45630	1,3328	813.2	610.1	48.32
66.3	1,45654	1,3335	814.8	611.0	48.41
66.4	1,45678	1,3341	816.3	611.9	48.50
66.5	1,45702	1,3347	817.9	612.8	48.60
66.6	1,45725	1,3353	819.4	613.6	48.69
66.7	1,45749	1,3360	820.9	614.5	48.77
66.8	1,45773	1,3366	822.5	615.4	48.87
66.9	1,45796	1,3372	824.1	616.2	48.97
67.0	1,45820	1,3378	825.6	617.1	49.05
67.1	1,45844	1,3385	827.2	618.0	49.15
67.2	1,45868	1,3391	828.8	618.9	49.24
67.3	1,45892	1,3398	830.4	619.8	49.34
67.4	1,45916	1,3404	832.0	620.7	49.43
67.5	1,45940	1,3411	833.7	621.6	49.53
67.6	1,45964	1,3418	835.3	622.5	49.63
67.7	1,45988	1,3424	836.9	623.4	49.73
67.8	1,46012	1,3431	838.5	624.3	49.82
67.9	1,46036	1,3437	840.1	625.2	49.92
68.0	1,46060	1,3444	841.7	626.1	50.01
66.1	1,46084	1,3450	843.4	627.0	50.11
68.2	1,46108	1,3457	845.1	628.0	50.21
68.3	1,46132	1,3464	846.7	628.9	50.31
68.4	1,46156	1,3471	848.4	629.8	50.41
68.5	1,46181	1,3478	850.1	630.8	50.51
68.6	1,46205	1,3484	851.8	631.7	50.61
68.7	1,46229	1,3491	853.5	632.6	50.71
68.8	1,46253	1,3498	855.1	633.5	50.81
68.9	1,46277	1,3505	856.8	634.5	50.91
69.0	1,46301	1,3512	858.5	635.4	51.01
69.1	1,46325	1,3518	860.1	636.3	51.10
69.2	1,46350	1,3525	861.7	637.2	51.20
69.3	1,46374	1,3531	863.3	638.0	51.29
69.4	1,46398	1,3538	864.9	638.9	51.39

Segue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Índice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
69.5	1,46423	1,3544	866.6	639.8	51.49
69.6	1,46447	1,3551	868.2	640.7	51.58
69.7	1,46471	1,3557	869.8	641.6	51.68
69.8	1,46495	1,3564	871.4	642.4	51,76
69.9	1,46520	1,3570	873.0	643.3	51.87
70.0	1,46544	1,3577	874,6	644.2	51.97
70.1	1,46568	1,3583	876.2	645.1	52.06
70.2	1,46593	1,3590	877.8	645.9	52.15
70.3	1,46618	1,3596	879.4	646.8	52.25
70.4	1,46642	1,3603	881.0	647.7	52.35
70.5	1,46667	1,3609	882.7	648,6	52.45
70.6	1,46691	1,3616	884.3	649.4	52.54
70.7	1,46715	1,3622	885.9	650.3	52.64
70.8	1,46740	1,3629	887.5	651.2	52.73
70.9	1,46765	1,3635	889.1	652.1	52.83
71.0	1,46789	1,3642	890.7	652.9	52.92
71.1	1,46814	1,3649	892.4	653.8	53.02
71.2	1,46838	1,3655	894.1	654.7	53.12
71.3	1,46863	1,3662	895.7	655.6	53.22
71.4	1,46888	1,3669	897.4	656.5	53.32
71.5	1,46913	1,3676	899.1	657.4	53.42
71.6	1,46937	1,3683	900.8	658.3	53.52
71.7	1,46962	1,3689	902.5	659.2	53.62
71.8	1,46987	1,3696	904.1	660.1	53.72
71.9	1,47011	1,3703	905.8	661.0	53.82
72.0	1,47038	1,3710	907.5	661.9	53.92
72.1	1,47061	1,3717	909.2	662.8	54.02
72.2	1,47086	1,3723	910.8	663.7	54.12
72.3	1,47110	1,3730	912.5	664.6	54.22
72.4	1,47135	1,3737	914,2	665.5	54.32
72.5	1,47160	1,3744	915.9	666.4	54.42
72.6	1,47185	1,3750	917.5	667.3	54.51
72.7	1,47210	1,3757	919.2	668.2	54.62
72.8	1,47234	1,3764	920.9	669.0	54.72
72.9	1,47259	1,3771	922.5	669.9	54.81

Segue

TABLA XVI (continuación)

Sacarosa % (° Brix)	Indice de refracción a 20 °C	Masa volúmica a 20 °C	Azúcar en g/l	Azúcar en g/Kg	Alcohol % vol. 20 °C
73.0	1,47284	1,3777	924.2	670.8	54.91
73.1	1,47309	1,3784	925.9	671.7	55.01
73.2	1,47334	1,3791	927.6	672.6	55.11
73.3	1,47359	1,3798	929.2	673.5	55.21
73.4	1,47384	1,3804	930.9	674.4	55.31
73.5	1,47409	1,3811	932.6	675.2	55.41
73.6	1,47434	1,3818	934.3	676.1	55.51
73.7	1,47459	1,3825	936.0	677.0	55.61
73.8	1,47484	1,3832	937.6	677.9	55.71
73.9	1,47509	1,3838	939.3	678.8	55.81
74.0	1,47534	1,3845	941.0	679.7	55.91
74.1	1,47559	1,3852	942.7	680.5	56.01
74.2	1,47584	1,3859	944.4	681.4	56.11
74.3	1,47609	1,3866	946.0	682.3	56.21
74.4	1,47634	1,3872	947.7	683.2	56.31
74.5	1,47660	1,3879	949.4	684.0	56.41
74.6	1,47665	1,3886	951.1	684.9	56.51
74.7	1,47710	1,3893	952.8	685.8	56.61
74.8	1,47735	1,3900	954.4	686.7	56.71
74.9	1,47760	1,3906	956.1	687.5	56.81

TABLAS

TABLA XVII	5
TABLA XVIII	20
TABLA XIX	21
TABLA XX	23
TABLA XXI	29
TABLA XXII	30

TABLA XVII

Equivalencia entre la densidad a 20°/20 °C del vino privado de su alcohol y el extracto seco total en g/L (Reichard).

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0000	0.0	1,0035	9.0	1,0070	18.0
1,0001	0.3	1,0036	9.3	1,0071	18,3
1,0002	0.5	1,0037	9.5	1,0072	18.5
1,0003	0.8	1,0038	9.8	1,0073	18.8
1,0004	1.0	1,0039	10.0	1,0074	19.0
1,0005	1.3	1,0040	10.3	1,0075	19.3
1,0006	1.6	1,0041	10.6	1,0076	19.6
1,0007	1.8	1,0042	10.8	1,0077	19.8
1,0008	2.1	1,0043	11.1	1,0078	20.1
1,0009	2.3	1,0044	11,3	1,0079	20.3
1,0010	2.6	1,0045	11.6	1,0080	20.6
1,0011	2.9	1,0045	11.9	1,0081	20.9
1,0012	3.1	1,0047	12.1	1,0082	21.1
1,0013	3.4	1,0048	12.4	1,0083	21.4
1,0014	3.6	1,0049	12.6	1,0084	21.6
1,0015	3.9	1,0050	12.9	1,0085	21.9
1,0016	4.2	1,0051	13.2	1,0086	22.2
1,0017	4,4	1,0052	13.4	1,0087	22.4
1,0018	4.7	1,0053	13.7	1,0088	22.7
1,0019	4.9	1,0054	13.9	1,0089	22.9
1,0020	5.1	1,0055	14.2	1,0090	23.2
1,0021	5.4	1,0056	14.5	1,0091	23.5
1,0022	5.6	1,0057	14.7	1,0092	23.7
1,0023	5.9	1,0058	15.0	1,0093	24.0
1,0024	6.1	1,0059	15.2	1,0094	24.2
1,0025	6.4	1,0060	15.5	1,0095	24.5
1,0026	6.7	1,0061	15.8	1,0096	24.8
1,0027	6.9	1,0062	16.0	1,0097	25.0
1,0028	7.2	1,0063	16.3	1,0098	25.3
1,0029	7.4	1,0064	16.5	1,0099	25.5
1,0030	7.7	1,0065	16.8	1,0100	25.8
1,0031	8.0	1,0066	17.1	1,0101	26.1
1,0032	8.2	1,0067	17.3	1,0102	26.3
1,0033	8.5	1,0068	17.6	1,0103	26.8
1,0034	8.7	1,0069	17.8	1,0104	26.8

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0105	27.1	1,0140	36.2	1,0175	45.2
1,0106	27.4	1,0141	36.5	1,0176	45.5
1,0107	27.8	1,0142	36.7	1,0177	45.7
1,0108	27.9	1,0143	37.0	1,0178	46.0
1,0109	28.1	1,0144	37.2	1,0179	46.2
1,0110	28.4	1,0145	37.5	1,0180	46.5
1,0111	28.7	1,0146	37.8	1,0181	46.8
1,0112	28.9	1,0147	38.0	1,0182	47.0
1,0113	29.2	1,0148	38.3	1,0183	47.3
1,0114	29.4	1,0149	38.5	1,0184	47.5
1,0115	29.7	1,0150	38.8	1,0185	47.8
1,0116	30.0	1,0151	39.1	1,0186	48.1
1,0117	30.2	1,0152	39.3	1,0187	48.3
1,0118	30.5	1,0153	39.6	1,0188	48.6
1,0119	30.7	1,0154	39.8	1,0189	48.8
1,0120	31.0	1,0155	40.1	1,0190	49.1
1,0121	31.3	1,0156	40.4	1,0191	49.4
1,0122	31.5	1,0157	40.6	1,0192	49.6
1,0123	31.8	1,0158	40.9	1,0193	49.9
1,0124	32.0	1,0159	41.1	1,0194	50.1
1,0125	32.3	1,0160	41.3	1,0195	50.4
1,0126	32.6	1,0161	41.6	1,0196	50.7
1,0127	32.8	1,0162	41.8	1,0197	50.9
1,0128	33.1	1,0163	42.1	1,0198	51.2
1,0129	33.3	1,0164	42.3	1,0199	51.4
1,0130	33.6	1,0165	42.6	1,0200	51.7
1,0131	33.9	1,0166	42.9	1,0201	52.0
1,0132	34.1	1,0167	43.1	1,0202	52.2
1,0133	34.4	1,0168	43.4	1,0203	52.5
1,0134	34.6	1,0169	43.6	1,0204	52.7
1,0135	34.9	1,0170	43.9	1,0205	53.0
1,0136	35.2	1,0171	44.2	1,0206	63.3
1,0137	35.4	1,0172	44.4	1,0207	53.5
1,0138	35.7	1,0173	44.7	1,0208	63.8
1,0139	35.9	1,0174	44.9	1,0209	54.0

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0210	54.3	1,0245	83.4	1,0280	72.5
1,0211	54.6	1,0246	63.7	1,0281	72.8
1,0212	54.8	1,0247	63.9	1,0282	73.0
1,0213	55.1	1,0248	64.2	1,0283	73.3
1,0214	55.3	1,0249	64.4	1,0284	73.5
1,0215	55.6	1,0250	64.7	1,0285	73.8
1,0216	55.9	1,0251	65.0	1,0288	74.1
1,0217	56.1	1,0252	65.2	1,0287	74.3
1,0218	56.4	1,0253	65.5	1,0288	74.6
1,0219	56.7	1,0254	65.7	1,0289	74.8
1,0220	56.9	1,0255	66.0	1,0290	75.1
1,0221	57.2	1,0256	66.3	1,0291	75.4
1,0222	57.4	1,0257	66.5	1,0292	75.6
1,0223	57.7	1,0258	66.8	1,0293	75.9
1,0224	57.9	1,0259	67.0	1,0294	76.1
1,0225	58,2	1,0260	67.3	1,0295	76.4
1,0226	58.5	1,0261	67.8	1,0296	76,7
1,0227	58,7	1,0262	67.8	1,0297	76.9
1,0228	59.0	1,0263	68.1	1,0298	77.2
1,0229	59.2	1,0264	68.3	1,0299	77.4
1,0230	59.5	1,0265	68.6	1,0300	77.7
1,0231	59.8	1,0266	68.9	1,0301	78.0
1,0232	60.0	1,0267	89.1	1,0302	78.2
1,0233	60.3	1,0268	69.4	1,0303	78.5
1,0234	60.5	1,0269	69.6	1,0304	78.7
1,0235	60.8	1,0270	69.9	1,0305	79.0
1,0236	61.1	1,0271	70.2	1,0306	79.3
1,0237	61.3	1,0272	70.4	1,0307	79.5
1,0238	61.6	1,0273	70.7	1,0308	79.8
1,0239	61.8	1,0274	70.9	1,0309	80.0
1,0240	62.1	1,0275	71.2	1,0310	80.3
1,0241	62.4	1,0276	71.5	1,0311	80.6
1,0242	62.6	1,0277	71.7	1,0312	80.8
1,0243	62.9	1,0278	72.0	1,0313	81,1
1,0244	63.1	1,0279	72.2	1,0314	81.3

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0315	81.6	1,0350	90.7	1,0385	99.8
1,0316	81.9	1,0351	91.0	1,0386	100.1
1,0317	82.1	1,0352	91.2	1,0387	100.3
1,0318	82.4	1,0353	91.5	1,0388	100.6
1,0319	82.6	1,0354	91.7	1,0389	100.8
1,0320	82.9	1,0355	92.0	1,0390	101.1
1,0321	83.2	1,0356	92.3	1,0391	101.4
1,0322	83.4	1,0357	92.5	1,0392	101.6
1,0323	83.7	1,0358	92.8	1,0393	101.9
1,0324	83.9	1,0359	93.0	1,0394	102.1
1,0325	84.2	1,0360	93.3	1,0395	102.4
1,0326	84.5	1,0361	93.6	1,0396	102.7
1,0327	84.7	1,0362	93.8	1,0397	102.9
1,0328	85.0	1,0363	94.1	1,0398	103.2
1,0329	85.2	1,0364	94.3	1,0399	103.4
1,0330	85.5	1,0365	94.6	1,0400	103.7
1,0331	85.8	1,0366	94.9	1,0401	104.0
1,0332	86.0	1,0367	95.1	1,0402	104.2
1,0333	86.3	1,0368	95.4	1,0403	104.5
1,0334	86.5	1,0369	95.6	1,0404	104.7
1,0335	86.8	1,0370	95.9	1,0405	105.0
1,0336	87.1	1,0371	96.2	1,0406	105.3
1,0337	87.3	1,0372	96.4	1,0407	105.5
1,0338	87.6	1,0373	96.7	1,0408	105.8
1,0339	87.8	1,0374	96.9	1,0409	106.0
1,0340	88.1	1,0375	97.2	1,0410	106.3
1,0341	88.4	1,0376	97.5	1,0411	106.6
1,0342	88.6	1,0377	97.7	1,0412	106.8
1,0343	88.9	1,0378	98.0	1,0413	107.1
1,0344	89.1	1,0379	98.2	1,0414	107.3
1,0345	89.4	1,0380	98.5	1,0415	107.6
1,0346	89.7	1,0381	98.8	1,0416	107.9
1,0347	89.9	1,0382	99.0	1,0417	108.1
1,0348	90.2	1,0383	99.3	1,0418	108.4
1,0349	90.4	1,0384	99.5	1,0419	108.7

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0420	109.0	1,0455	118.1	1,0490	127.2
1,0421	109.3	1,0456	118.4	1,0491	127.5
1,0422	109.5	1,0457	118.6	1,0492	127.7
1,0423	109.8	1,0468	118.9	1,0493	128.0
1,0424	110.0	1,0459	119.1	1,0494	128.2
1,0425	110.3	1,0480	119.4	1,0495	128.6
1,0426	110.6	1,0461	119.7	1,0496	128.8
1,0427	110.8	1,0462	119.9	1,0497	129.0
1,0428	111.1	1,0463	120.2	1,0498	129.3
1,0429	111.3	1,0464	120.4	1,0499	129.5
1,0430	111.6	1,0465	120.7	1,0500	129.8
1,0431	111.9	1,0466	121.0	1,0501	130.1
1,0432	112.1	1,0467	121.2	1,0502	130.3
1,0433	112.4	1,0468	121.5	1,0503	130.6
1,0434	112.6	1,0469	121.7	1,0504	130.8
1,0435	112.9	1,0470	122.0	1,0505	131.1
1,0436	113.2	1,0471	122.3	1,0506	131.4
1,0437	113.4	1,0472	122.5	1,0507	131.6
1,0438	113.7	1,0473	122.8	1,0608	131.9
1,0439	113.9	1,0474	123.0	1,0509	132.1
1,0440	114.2	1,0475	123.3	1,0510	132.4
1,0441	114.5	1,0476	123.6	1,0511	132.7
1,0442	114.7	1,0477	123.8	1,0512	132.9
1,0443	115.0	1,0478	124.1	1,0513	133.2
1,0444	115.2	1,0479	124.3	1,0514	133.4
1,0445	115.5	1,0480	124.6	1,0615	133.7
1,0446	115.8	1,0481	124.9	1,0516	134.0
1,0447	116.0	1,0482	125.1	1,0517	134.2
1,0448	116.3	1,0483	125.4	1,0518	134.5
1,0449	116.5	1,0484	125.6	1,0519	134.7
1,0450	116.8	1,0485	125.9	1,0520	135.1
1,0451	117.1	1,0486	126.2	1,0521	135.4
1,0452	117.3	1,0487	126.4	1,0522	135.6
1,0453	117.6	1,0488	126.7	1,0523	135.9
1,0454	117.8	1,0489	126.9	1,0524	136.1

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0525	136.4	1,0560	145.5	1,0595	154.6
1,0526	136.7	1,0561	145.8	1,0596	154.9
1,0527	136.9	1,0562	146.0	1,0597	155.1
1,0528	137.2	1,0563	146.3	1,0598	155.4
1,0529	137.4	1,0564	146.5	1,0599	155.6
1,0530	137.7	1,0565	146.8	1,0600	156.0
1,0531	138.0	1,0566	147.1	1,0601	156.3
1,0532	138.2	1,0567	147.3	1,0602	156.5
1,0533	138.5	1,0568	147.6	1,0603	156.8
1,0534	138.7	1,0569	147.8	1,0604	157.0
1,0535	139.0	1,0570	148.1	1,0605	157.3
1,0536	139.3	1,0571	148.4	1,0606	157.6
1,0537	139.5	1,0572	148.8	1,0607	157.8
1,0538	139.8	1,0573	148.9	1,0608	158.1
1,0539	140.0	1,0574	149.1	1,0609	158.3
1,0540	140.3	1,0575	149.4	1,0610	158.6
1,0541	140.6	1,0576	149.7	1,0611	158.9
1,0541	140.6	1,0577	149.9	1,0612	159.1
1,0543	141.1	1,0578	150.2	1,0613	159.4
1,0544	141.3	1,0579	150.4	1,0614	159.6
1,0545	141.6	1,0680	150.7	1,0615	159.9
1,0548	141.9	1,0581	151.0	1,0616	160.2
1,0547	142.1	1,0582	151.2	1,0617	160.4
1,0548	142.4	1,0583	151.5	1,0618	160.7
1,0549	142.6	1,0584	151.7	1,0619	160.9
1,0550	142.9	1,0585	152.0	1,0620	161.2
1,0551	143.2	1,0586	152.3	1,0621	161.5
1,0552	143.4	1,0587	152.5	1,0622	161.7
1,0553	143.7	1,0588	152.8	1,0623	162.0
1,0554	143.9	1,0589	153.0	1,0624	162.2
1,0555	144.2	1,0590	163.3	1,0625	162.5
1,0556	144.5	1,0591	153.6	1,0626	162.8
1,0557	144.7	1,0592	153.8	1,0627	163.0
1,0558	146.0	1,0593	154.1	1,0628	163.3
1,0559	145.2	1,0594	154.3	1,0629	163.5

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0630	163.8	1,0665	173.0	1,0700	182.2
1,0631	164.1	1,0666	173.3	1,0701	182.5
1,0632	164.3	1,0667	173.5	1,0702	182.7
1,0633	164.6	1,0668	173.8	1,0703	183.0
1,0634	164.8	1,0669	174.0	1,0704	183.2
1,0635	165.1	1,0670	174.3	1,0705	183.5
1,0636	165.4	1,0671	174.6	1,0706	183.8
1,0637	165.6	1,0672	174.8	1,0707	184.0
1,0638	165.9	1,0673	175.1	1,0708	184.3
1,0639	166.1	1,0674	175.3	1,0709	184.5
1,0640	166.4	1,0675	175.6	1,0710	184.8
1,0641	166.7	1,0676	175.9	1,0711	185.1
1,0642	166.9	1,0677	176.1	1,0712	185.3
1,0643	167.2	1,0678	176.4	1,0713	185.6
1,0644	167.4	1,0679	176.6	1,0714	185.8
1,0645	167.7	1,0680	176.9	1,0715	186.1
1,0646	168.0	1,0681	177.2	1,0716	186.4
1,0647	168.2	1,0682	177.4	1,0717	186.6
1,0648	168.5	1,0683	177.7	1,0718	186.9
1,0649	168.7	1,0684	177.9	1,0719	187.1
1,0650	169.1	1,0685	178.2	1,0720	187.4
1,0651	169.4	1,0686	178.5	1,0721	187.7
1,0652	169.6	1,0687	178.7	1,0722	187.9
1,0653	169.9	1,0688	179.0	1,0723	188.2
1,0654	170.1	1,0689	179.2	1,0724	188.4
1,0655	170.4	1,0690	179.5	1,0725	188.7
1,0656	170.7	1,0691	179.8	1,0726	189.0
1,0657	170.9	1,0692	180.0	1,0727	189.2
1,0658	171.2	1,0693	180.3	1,0728	189.5
1,0659	171.4	1,0694	180.5	1,0729	189.7
1,0660	171.7	1,0695	180.8	1,0730	190.0
1,0661	172.0	1,0696	181.1	1,0731	190.3
1,0662	172.2	1,0697	181.3	1,0732	190.5
1,0663	172.5	1,0696	181.6	1,0733	190.8
1,0664	172.7	1,0699	181.8	1,0734	191.0

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0735	191.3	1,0770	200.5	1,0805	209.7
1,0736	191.6	1,0771	200.8	1,0806	210.0
1,0737	191.8	1,0772	201.0	1,0807	210.2
1,0738	192.1	1,0773	201.3	1,0808	210.5
1,0739	192.3	1,0774	201.5	1,0809	210.7
1,0740	192.6	1,0775	201.8	1,0810	211.0
1,0741	192.9	1,0776	202.1	1,0811	211.3
1,0742	193.1	1,0777	202.3	1,0812	211.5
1,0743	193.4	1,0778	202.6	1,0813	211.8
1,0744	193.6	1,0779	202.2	1,0814	212.0
1,0745	193.9	1,0780	203.1	1,0815	212.3
1,0746	194.2	1,0781	203.4	1,0816	212.6
1,0747	194.4	1,0782	203.6	1,0817	212.8
1,0748	194.7	1,0783	203.9	1,0818	213.1
1,0749	195.0	1,0784	204.1	1,0819	213.3
1,0750	195.3	1,0785	204.4	1,0820	213.6
1,0751	195.6	1,0786	204.7	1,0821	213.9
1,0752	195.8	1,0787	204.9	1,0822	214.1
1,0753	196.1	1,0788	205.2	1,0823	214.4
1,0754	196.3	1,0789	205.5	1,0824	214.6
1,0755	196.6	1,0790	205.8	1,0825	214.9
1,0756	196.9	1,0791	206.1	1,0826	215.2
1,0757	197.1	1,0792	206.3	1,0827	215.4
1,0758	197.4	1,0793	206.6	1,0828	215.7
1,0759	197.6	1,0794	206.8	1,0829	215.9
1,0760	197.9	1,0795	207.1	1,0830	216.3
1,0761	198.2	1,0796	207.4	1,0831	216.5
1,0762	198.4	1,0797	207.6	1,0832	216.8
1,0763	198.7	1,0798	207.9	1,0833	217.1
1,0764	198.9	1,0799	208.1	1,0834	217.3
1,0765	199.2	1,0800	208.4	1,0635	217.6
1,0766	199.5	1,0801	208.7	1,0836	217.9
1,0767	199.7	1,0802	208.9	1,0837	218.1
1,0768	200.0	1,0803	209.2	1,0838	218.4
1,0769	200.3	1,0804	209.4	1,0639	218.6

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0840	218.9	1,0875	228.1	1,0910	237.3
1,0841	219.2	1,0876	228.4	1,0911	237.5
1,0842	219.4	1,0877	228.6	1,0912	237.8
1,0843	219.7	1,0878	228.9	1,0913	238.1
1,0844	219.9	1,0879	229.1	1,0914	238.3
1,0845	220.2	1,0880	229.4	1,0915	238.6
1,0846	220.5	1,0881	229.7	1,0916	238.9
1,0847	220.7	1,0882	229.9	1,0917	239.1
1,0848	221.0	1,0883	230.2	1,0918	239.4
1,0649	221.2	1,0684	230.4	1,0919	239.6
1,0850	221.5	1,0885	230.7	1,0920	239.9
1,0851	221.8	1,0886	231.0	1,0921	240.2
1,0852	222.0	1,0887	231.2	1,0922	240.4
1,0853	222.3	1,0888	231.5	1,0923	240.7
1,0854	222.5	1,0889	231.7	1,0924	240.9
1,0866	222.8	1,0890	232.0	1,0925	241.2
1,0856	223.1	1,0691	232.3	1,0926	241.5
1,0857	223.3	1,0892	232.5	1,0927	241.7
1,0858	223.6	1,0893	232.8	1,0928	242.0
1,0859	223.8	1,0894	233.0	1,0929	242.2
1,0860	224.2	1,0895	233.3	1,0930	242.6
1,0861	224.5	1,0896	233.6	1,0931	242.9
1,0862	224.7	1,0897	233.8	1,0932	243.1
1,0863	225.0	1,0698	234.1	1,0933	243.4
1,0864	225.2	1,0899	234.3	1,0934	243.6
1,0865	225.5	1,0900	234.7	1,0935	243.9
1,0866	225.8	1,0901	235.0	1,0936	244.2
1,0867	226.0	1,0902	235.2	1,0937	244.4
1,0868	226.3	1,0903	235.5	1,0938	244.7
1,0869	226.5	1,0904	235.7	1,0939	244.9
1,0870	226.8	1,0905	236.0	1,0940	245.2
1,0871	227.1	1,0906	236.3	1,0941	245.5
1,0872	227.3	1,0907	236.5	1,0942	245.7
1,0873	227.6	1,0908	236.8	1,0943	246.0
1,0874	227.8	1,0909	237.0	1,0944	246.2

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,0945	246.5	1,0980	255.7	1,1015	265.0
1,0946	246.8	1,0981	256.0	1,1016	265,3
1,0947	247.0	1,0982	256.2	1,1017	265.5
1,0948	247.3	1,0983	256,5	1,1018	265.8
1,0949	247.5	1,0984	256.7	1,1019	266.0
1,0950	247.8	1,0985	257.0	1,1020	266,3
1,0951	248.1	1,0986	257.3	1,1021	266.6
1,0952	248.3	1,0987	257.5	1,1022	266.8
1,0953	248.6	1,0988	257,8	1,1023	267.1
1,0954	248.8	1,0989	258.1	1,1024	267.3
1,0955	249.1	1,0990	258.4	1,1025	267.6
1,0956	249.4	1,0991	258.7	1,1026	267.9
1,0957	249.6	1,0992	258.9	1,1027	268.1
1,0958	249.9	1,0993	259.2	1,1028	268.4
1,0959	250.2	1,0994	259.4	1,1029	268.6
1,0960	250.5	1,0995	259.7	1,1030	268.9
1,0961	250.8	1,0996	260,0	1,1031	269.2
1,0962	251.0	1,0997	260.2	1,1032	269,4
1,0963	251.3	1,0998	260.5	1,1033	269.7
1,0964	251.5	1,0999	260.7	1,1034	270.0
1,0965	251.8	1,1000	261,0	1,1035	270.2
1,0966	252.1	1,1001	261.3	1,1036	270.5
1,0967	252.3	1,1002	261.5	1,1037	270.7
1,0968	252.6	1,1003	261.8	1,1038	271.0
1,0969	262,8	1,1004	262.0	1,1039	271.3
1,0970	253.1	1,1005	262.3	1,1040	271.8
1,0971	253.4	1,1006	262.6	1,1041	271.9
1,0972	253.6	1,1007	262,8	1,1042	272.1
1,0973	253.9	1,1008	263.1	1,1043	272.4
1,0974	254,1	1,1009	263.4	1,1044	272.6
1,0976	254.4	1,1010	263.7	1,1045	272.9
1,0976	254.7	1,1011	264.0	1,1046	273.2
1,0977	254.9	1,1012	264.2	1,1047	273.4
1,0978	255.2	1,1013	264.5	1,1048	273.7
1,0979	255.4	1,1014	264.8	1,1049	273.9

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,1050	274.2	1,1085	283.4	1,1120	292.7
1,1051	274.5	1,1086	283.7	1,1121	293.0
1,1052	274.7	1,1087	283.9	1,1122	293.2
1,1053	275.0	1,1088	284.2	1,1123	293.5
1,1054	275.2	1,1089	284.5	1,1124	293.7
1,1055	275.5	1,1090	284.8	1,1125	294.0
1,1056	275.8	1,1091	285.1	1,1126	294.3
1,1057	276.0	1,1092	285.3	1,1127	294.5
1,1058	276.3	1,1093	285.6	1,1128	294.8
1,1059	276.5	1,1094	285.8	1,1129	295.0
1,1060	276.9	1,1095	286.1	1,1130	295.3
1,1061	277.2	1,1096	286.4	1,1131	295.6
1,1062	277.4	1,1097	286.6	1,1132	295.8
1,1063	277.7	1,1098	296.9	1,1133	296.1
1,1064	277.9	1,1099	287.1	1,1134	296.3
1,1065	278.2	1,1100	287.4	1,1135	296.6
1,1066	278.5	1,1101	287.7	1,1136	296.9
1,1067	278.7	1,1102	288.0	1,1137	297.1
1,1068	279.0	1,1103	288.2	1,1138	297.4
1,1069	279.2	1,1104	288.5	1,1139	297.7
1,1070	279.5	1,1105	288.7	1,1140	298.0
1,1071	279.8	1,1106	289.0	1,1141	298.3
1,1072	280.0	1,1107	289.2	1,1142	298.6
1,1073	280.3	1,1108	289.5	1,1143	298.8
1,1074	280.5	1,1109	289.8	1,1144	299.1
1,1075	280.8	1,1110	290.1	1,1145	299.3
1,1076	281.1	1,1111	290.4	1,1146	299.6
1,1077	281.3	1,1112	290,6	1,1147	299.9
1,1078	281.6	1,1113	290.9	1,1148	300.1
1,1079	281.8	1,1114	291.1	1,1149	300.4
1,1080	282.1	1,1115	291.4	1,1150	300.6
1,1081	282.4	1,1116	291,7	1,1151	300.9
1,1082	282.6	1,1117	291.9	1,1152	301.2
1,1083	282.9	1,1118	292.2	1,1153	301.5
1,1084	283.1	1,1119	292.5	1,1154	301.7

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,1155	302.0	1,1190	311.2	1,1225	320.6
1,1156	302.2	1,1191	311.5	1,1226	320.8
1,1157	302.5	1,1192	311.7	1,1227	321.1
1,1158	302.8	1,1193	312.0	1,1228	321.4
1,1159	303.0	1,1194	312.3	1,1229	321.6
1,1160	303.3	1,1195	312.5	1,1230	321.8
1,1161	303.6	1,1196	312.8	1,1231	322.1
1,1162	303.8	1,1197	313.1	1,1232	322.3
1,1163	304.1	1,1198	313.3	1,1233	322.6
1,1164	304.4	1,1199	313.6	1,1234	322.8
1,1165	304.6	1,1200	313.9	1,1235	323.1
1,1166	304.9	1,1201	314.1	1,1236	323.4
1,1167	305.1	1,1202	314.4	1,1237	323.7
1,1168	305.4	1,1203	314.7	1,1238	324.0
1,1169	305.7	1,1204	314.9	1,1239	324.3
1,1170	305.9	1,1205	315.2	1,1240	324.6
1,1171	306.2	1,1206	315.5	1,1241	324.9
1,1172	306.5	1,1207	315.7	1,1242	325.1
1,1173	306.7	1,1208	316.0	1,1243	325.4
1,1174	307.0	1,1209	316.3	1,1244	325.7
1,1175	307.3	1,1210	316.5	1,1245	325.9
1,1176	307.5	1,1211	316.8	1,1246	326.2
1,1177	307.8	1,1212	317.1	1,1247	326.5
1,1178	306.1	1,1213	317.4	1,1248	326.7
1,1179	308.3	1,1214	317.6	1,1249	327.0
1,1180	308.6	1,1215	317.9	1,1250	327.2
1,1181	308.8	1,1216	318.2	1,1251	327.5
1,1182	309.1	1,1217	318.4	1,1252	327.8
1,1183	309.4	1,1218	318.7	1,1253	328.0
1,1184	309.6	1,1219	319.0	1,1254	328.3
1,1185	309.9	1,1220	319.2	1,1255	326.6
1,1186	310.2	1,1221	319.5	1,1256	328.8
1,1187	310.4	1,1222	319.8	1,1257	329.1
1,1188	310.7	1,1223	320.0	1,1258	329.3
1,1189	311.0	1,1224	320.3	1,1259	329.6

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,1260	329.8	1,1295	339.1	1,1330	348.4
1,1261	330.1	1,1296	339.3	1,1331	348.7
1,1262	330.4	1,1297	339.6	1,1332	348.9
1,1263	330.7	1,1298	339.9	1,1333	349.2
1,1264	330.9	1,1299	340.1	1,1334	349.5
1,1265	331.2	1,1300	340.4	1,1335	349.7
1,1266	331.4	1,1301	340.7	1,1336	350.0
1,1267	331.7	1,1302	340.9	1,1337	360.3
1,1268	332.0	1,1303	341.2	1,1338	350.5
1,1269	332.2	1,1304	341.5	1,1339	350.8
1,1270	332.5	1,1305	341.7	1,1340	351.0
1,1271	332.6	1,1306	342.0	1,1341	351.3
1,1272	333.0	1,1307	342.3	1,1342	351.6
1,1273	333.3	1,1308	342.5	1,1343	351.9
1,1274	333.5	1,1309	342.8	1,1344	352.1
1,1275	333.8	1,1310	343.0	1,1345	352.4
1,1276	334.1	1,1311	343.3	1,1346	352.7
1,1277	334.3	1,1312	343.6	1,1347	352.9
1,1278	334.6	1,1313	343.9	1,1348	353.2
1,1279	334.9	1,1314	344.1	1,1349	363.5
1,1280	335.1	1,1315	344.4	1,1350	353.7
1,1281	335.4	1,1316	344.7	1,1351	354.0
1,1282	335.6	1,1317	344.9	1,1352	354.3
1,1283	335.9	1,1318	345.2	1,1353	354.5
1,1284	336.2	1,1319	345.5	1,1354	354.8
1,1285	336.4	1,1320	345.7	1,1355	355.1
1,1286	336.7	1,1321	346.0	1,1356	355.3
1,1287	337.0	1,1322	346.3	1,1357	355.6
1,1288	337.2	1,1323	346.5	1,1358	355.9
1,1289	337.5	1,1324	346.8	1,1359	356.1
1,1290	337.7	1,1325	347.1	1,1360	356.3
1,1291	338.0	1,1326	347.3	1,1361	356.7
1,1292	338.3	1,1327	347.6	1,1362	356.9
1,1293	338.5	1,1328	347.9	1,1363	357.2
1,1294	338.8	1,1329	348.1	1,1364	357.5

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,1365	357.7	1,1400	367.0	1,1435	376,3
1,1366	358.0	1,1401	367.3	1,1436	376.6
1,1367	358.3	1,1402	367.6	1,1437	376.9
1,1368	358.5	1,1403	367.8	1,1438	377.1
1,1369	358.8	1,1404	368.1	1,1439	377,4
1,1370	359.0	1,1405	368.4	1,1449	377.6
1,1371	359.3	1,1406	368.6	1,1441	377.9
1,1372	359.6	1,1407	368.9	1,1442	378.2
1,1373	359.9	1,1406	369.2	1,1443	378.5
1,1374	360.1	1,1409	369.4	1,1444	378.7
1,1375	360.4	1,1410	369.7	1,1445	379.0
1,1376	360.7	1,1411	370.0	1,1446	379.3
1,1377	360.9	1,1412	370.2	1,1447	379.5
1,1378	361.2	1,1413	370.5	1,1448	379.8
1,1379	361.5	1,1414	370.8	1,1449	380.0
1,1380	361.7	1,1415	371.0	1,1450	380.3
1,1361	362.0	1,1416	371.3	1,1451	380.6
1,1362	362.3	1,1417	371.6	1,1452	380.8
1,1383	362,5	1,1418	371.8	1,1453	381.1
1,1384	362.8	1,1419	372.1	1,1454	381.4
1,1385	363.1	1,1420	372.3	1,1455	381.6
1,1386	363.3	1,1421	372.6	1,1456	381.9
1,1387	363.6	1,1422	372.9'	1,1457	382.2
1,1388	363.9	1,1423	373.2	1,1458	382.4
1,1389	364.1	1,1424	373.4	1,1459	382.7
1,1390	364.4	1,1425	373.7	1,1460	383.0
1,1391	3647	1,1426	373.9	1,1461	383.2
1,1392	364.9	1,1427	374.2	1,1462	383.5
1,1393	365.2	1,1428	374.5	1,1463	383.8
1,1394	365.5	1,1429	374.7	1,1464	384.0
1,1395	365.7	1,1430	375.0	1,1465	384.3
1,1396	366.0	1,1431	375.3	1,1466	384.6
1,1397	366.3	1,1432	375.5	1,1467	384.8
1,1398	366.5	1,1433	375.8	1,1468	385.1
1,1399	366.8	1,1434	376.1	1,1489	385.4

Sigue

TABLA XVII (continuación)

Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro	Densidad a 20°/20°	Extracto g/litro
1,1470	385.6	1,1505	394.9	1,1540	404.3
1,1471	385.9	1,1506	395.2	1,1541	404.6
1,1472	386.2	1,1507	395.4	1,1542	404.8
1,1473	386.4	1,1508	395.7	1,1543	405.1
1,1474	386.7	1,1509	396.0	1,1544	405.3
1,1475	386.9	1,1510	396.3	1,1545	405.6
1,1476	387.2	1,1511	396.5	1,1546	405.9
1,1477	387.5	1,1512	396.8	1,1547	406.1
1,1478	387.7	1,1513	397.0	1,1548	406.4
1,1479	388.0	1,1514	397.3	1,1549	406.7
1,1480	388.3	1,1515	397.6	1,1550	407.1
1,1481	388.5	1,1516	397.8	1,1551	407.3
1,1482	388.8	1,1517	398.1	1,1552	407.5
1,1483	389.1	1,1518	398.4	1,1553	407.8
1,1484	389.3	1,1519	398.7	1,1554	408.0
1,1485	389.6	1,1520	399.0	1,1555	408.3
1,1486	389.9	1,1521	399.2	1,1556	408.6
1,1487	390.1	1,1522	399.4	1,1557	408.8
1,1488	390.4	1,1523	399.7	1,1558	409.1
1,1489	390.7	1,1524	399.9	1,1559	409.3
1,1490	391.0	1,1525	400.2		
1,1491	391.2	1,1526	400.5		
1,1492	391.5	1,1527	400.7		
1,1493	391.7	1,1528	401.0		
1,1494	392.0	1,1529	401.3		
1,1495	392.3	1,1530	401.6		
1,1496	392.5	1,1535	401.9		
1,1497	392.8	1,1532	402.1		
1,1498	393.0	1,1533	402.4		
1,1499	393.3	1,1534	402.6		
1,1500	393.6	1,1535	402.9		
1,1501	393.8	1,1536	403.2		
1,1502	394.1	1,1537	403.4		
1,1503	394.4	1,1538	403.7		
1,1504	394.6	1,1539	404.0		

TABLA XVIII

Corrección de la conductividad para temperaturas distintas a 20 °C, en microsiemens cm-1

Conductividad	Temperaturas									
	20.2	20.4	20.6	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)
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. Corrección a restar.

2. Corrección a sumar

TABLA XIX

Mezclas frigorígenas

SOLUCION AGUA-GLICERINA		
% en peso glicerina	Peso específico Kg/dm3 a 20 °C	Temperatura congelación °C
10	1.024	- 1.6
20	1.049	- 4.8
30	1.075	- 9.5
40	1.101	- 15.4
50	1.128	-23
60	1.156	- 34.8
70	1.184	- 38.9
80	1.211	- 20.9
90	1.238	- 1.6
100	1.264	+ 17
SOLUCION AGUA-ALCOHOL METILICO		
% en peso alcohol metílico	Peso específico Kg/dm3 a 20 °C	Temperatura congelación °C
2.5	0.994	- 1.1
6.8	0.987	-3
13.8	0.977	- 6.1
17.5	0.972	- 8.7
20.3	0.968	- 10.6
24.2	0.963	-14
29.9	0.954	- 18.9
39	0.937	- 28.7
47.3	0.922	- 33.9
56.1	0.900	-41
71.9	0.863	-51
SOLUCION AGUA-CLORURO SODICO		
% en peso NaCl	Peso específico Kg/dm3 a 15° C	Temperatura congelación °C
5.5	1.04	- 3.3
8.2	1.06	- 5.2
10.9	1.08	- 7.2
13.5	1.10	- 9.5
16.1	1.12	-12
18.6	1.14	- 14.8
21.1	1.16	-18
22.3	1.17	- 19.7
23.3	1.18	- 21.1

Sigue

TABLA XIX (continuación)

SOLUCION AGUA- ETILENGLICOL		
% en volumen etilenglicol	Peso específico Kg/dm ³ a 15 °C	Temperatura congelación °C
12.5	1.019	- 3.9
17.0	1.026	- 6.7
25.0	1.038	- 12.2
32.5	1.048	- 17.8
38.5	1.056	- 23.3
44.0	1.063	- 28.9
49.0	1.069	- 34.4
52.5	1.073	- 40
SOLUCION AGUA-CLORURO CALCICO		
% en peso CaCl	Peso específico Kg/dm ³ a 15 °C	Temperatura congelación °C
9.2	1.08	- 4.9
13.5	1.12	- 8.9
17.6	1.16	- 13.9
21.5	1.20	-21
25.1	1.25	-29.8
28.7	1.28	-42.4

TABLA XX

Equivalencias termométricas.

Sitúe en la columna central, en negrita, el valor (Celsius o Fahrenheit) que desea convertir. En las columnas derecha o izquierda hallará el equivalente deseado.

aC	?F o C?	aF	aC	?F o C?	aF	aC	?F o C?	aF
-40	-40	-40	- 23.33	-10	14	-6.67	20	68
-39.44	-39	-38.2	-22.78	-9	15.8	-6.11	21	69.8
-38.89	-38	-36.4	-22.22	-8	17.6	-5.56	22	71.6
-38.33	-37	-34.6	- 21.67	-7	19.4	-5	23	73.4
-37.78	-36	-32.8	- 21.11	-6	21.2	-4.44	24	75.2
-37.22	-35	-31	-20.56	-5	23	-3.89	25	77
-36.67	-34	-29.2	-20	-4	24.8	-3.33	26	78.8
-36.11	-33	-27.4	-19.44	-3	26.6	-2.78	27	80.6
-35.56	-32	-25.6	- 18.89	-2	28.4	-2.22	28	82.4
-35	-31	-23.8	-18.83	-1	30.2	-1.67	29	84.2
-34.44	-30	-22	-17.78	0	32	- 1.11	30	86
-33.89	-29	- 20.2	- 17.22	1	33.8	-0.56	31	87.8
-33.33	-28	-18.4	- 16.67	2	35.6	0	32	89.6
-32.78	-27	- 16.6	-16.11	3	37.4	0.56	33	91.4
-32.22	-26	-14.8	- 15.56	4	39.2	1.11	34	93.2
-31.67	-25	-13	-15	5	41	1.67	35	95
-31.11	-24	- 11.2	- 14.44	6	42.8	2.22	36	96.8
-30.56	-23	-9.4	- 13.89	7	44.6	2.78	37	98.6
-30	-22	-7.6	- 13.33	8	46.4	3.33	38	100.4
-29.44	-21	-5.8	- 12.78	9	48.2	3.89	39	102.2
-28.89	-20	-4	-12.22	10	50	4.44	40	104
-28.33	-19	-2.2	-11.67	11	51.8	5	41	105.8
-27.78	-18	-0.4	- 11.11	12	53.6	5.56	42	107.6
-27.22	-17	1.4	- 10.56	13	55.4	6.11	43	109.4
-26.67	-16	3.2	-10	14	57.2	6.67	44	111.2
-26.11	-15	5	-9.44	15	59	7.22	45	113
-25.56	-14	6.8	-8.89	16	60.8	7.78	46	114.8
-25	-13	8.6	-8.33	17	62.6	8.33	47	116.6
-24.44	-12	10.4	-7.78	18	64.4	8.89	48	118.4
-23.89	-11	12.2	-7.22	19	66.2	9.44	49	120.2

Sigue

TABLA XX (continuación)

aC	?F o C?	aF	aC	?F o C?	aF	aC	?F o C?	aF
10	50	122	29.44	85	185	48.89	120	248
10.56	51	123.8	30	86	186.8	49.44	121	249.8
11.11	52	125.6	30.56	87	188.6	50	122	251.6
11.67	53	127.4	31.11	88	190.4	50.56	123	253.4
12.22	54	129.2	31.67	89	192.2	51.11	124	255.2
12.78	55	131	32.22	90	194	51.67	125	257
13.33	56	132.8	32.78	91	195.8	52.22	126	158.8
13.89	57	134.6	33.33	92	197.6	52.78	127	260.6
14.44	58	136.4	33.89	93	199.4	53.33	128	262.4
15	59	138.2	34.44	94	201.2	53.89	129	264.2
15.56	60	140	35	95	203	54.44	130	266
16.11	61	141.8	35.56	96	204.8	55	131	267.8
16.67	62	143.6	36.11	97	206.6	55.56	132	269.6
17.22	63	145.4	36.67	98	208.4	56.11	133	271.4
17.78	64	147.2	37.22	99	210.2	56.67	134	273.2
18.33	65	149	37.78	100	212	57.22	135	275
18.89	66	150.8	38.33	101	213.8	57.78	136	276.8
19.44	67	152.6	38.89	102	215.6	58.33	137	278.6
20	68	154.4	39.44	103	217.4	58.89	138	280.4
20.56	69	156.2	40	104	219.2	59.44	139	282.2
21.11	70	158	40.56	105	221	60	140	284
21.67	71	159.8	41.11	106	222.8	60.56	141	285.8
22.22	72	161.6	41.67	107	224.6	61.11	142	287.6
22.78	73	163.4	42.22	108	226.4	61.67	143	289.4
23.33	74	165.2	42.78	109	228.2	62.22	144	291.2
23.89	75	167	43.33	110	230	62.78	145	293
24.44	76	168.8	43.89	111	231.8	63.33	146	294.8
25	77	170.6	44.44	112	233.6	63.89	147	296.6
25.56	78	172.4	45	113	235.4	64.44	148	298.4
26.11	79	174.2	45.56	114	237.2	65	149	300.2
26.67	80	176	46.11	115	239	65.56	150	302
27.22	81	177.8	46.67	116	240.8	66.11	151	303.8
27.78	82	179.6	47.22	117	242.6	66.67	152	305.6
28.33	83	181.4	47.78	118	244.4	67.22	153	307.4
28.89	84	183.2	48.33	119	246.2	67.78	154	309.2

Sigue

TABLA XX (continuación)

aC	?F o C?	aF	aC	?F o C?	aF	aC	?F o C?	aF
66.33	155	311	87.78	190	374	107.22	225	437
68.89	156	312.8	88.33	191	375.8	107.78	226	438.8
69.44	157	314.6	88.89	192	377.6	108.33	227	440.6
70	158	316.4	89.44	193	379.4	108.89	228	442.4
70.56	159	318.2	90	194	381.2	109.44	229	444.2
71.11	160	320	90.56	195	383	110	230	446
71.67	161	321.8	91.11	196	384.8	110.56	231	447.8
72.22	162	323.6	91.67	197	366.6	111.11	232	449.6
72.78	163	325.4	92.22	198	388.4	111.67	233	451.4
73.33	164	327.2	92.78	199	390.2	112.22	234	453.2
73.89	165	329	93.33	200	392	112.78	235	455
74.44	166	330.8	93.89	201	393.8	113.33	236	456.8
75	167	332.6	94.44	202	395.6	113.89	237	458.6
75.56	168	334.4	95	203	397.4	114.44	238	460.4
76.11	169	336.2	95.56	204	399.2	115	239	462.2
76.67	170	338	96.11	205	401	115.56	240	464
77.22	171	339.8	96.67	206	402.8	116.11	241	465.8
77.78	172	341.6	97.22	207	404.6	116.67	242	467.6
78.33	173	343.4	97.78	208	406.4	117.22	243	469.4
78.89	174	345.2	98.33	209	408.2	117.78	244	471.2
79.44	175	347	98.89	210	410	118.33	245	473
80	176	348.8	99.44	211	411.8	118.89	246	474.8
80.56	177	350.6	100	212	413.6	119.44	247	476.6
81.11	178	352.4	100.56	213	415.4	120	248	478.4
81.67	179	354.2	101.11	214	417.2	120.56	249	480.2
82.22	180	356	101.67	215	419	121.11	250	482
82.78	181	357.8	102.22	216	420.8	121.67	251	483.8
83.33	182	359.6	102.78	217	422.6	122.22	252	485.6
83.89	183	361.4	103.33	218	424.4	122.78	253	487.4
84.44	184	363.2	103.89	219	426.2	123.33	254	489.2
85	185	365	104.44	220	428	123.89	255	491
85.56	186	366.8	105	221	429.8	124.44	256	492.8
86.11	187	368.6	105.56	222	431.6	125	257	494.6
86.67	188	370.4	106.11	223	433.4	125.56	258	496.4
87.22	189	372.2	106.67	224	435.2	126.11	259	498.2

Sigue

TABLA XX (continuación)

aC	?F o C?	aF	aC	?F o C?	aF	aC	?F o C?	aF
126.67	260	500	146.11	295	563	165.56	330	626
127.22	261	501.8	146.67	296	564.8	166.11	331	627.8
127.78	262	503.6	147.22	297	566.6	166.67	332	629.6
128.33	263	505.4	147.78	298	568.4	167.22	333	631.4
128.89	264	507.2	148.33	299	570.2	167.78	334	633.2
129.44	265	509	148.89	300	572	166.33	335	635
130	266	510.8	149.44	301	573.8	168.89	336	636.8
130.56	267	512.6	150	302	575.6	169.44	337	638.6
131.11	268	514.4	150.56	303	577.4	170	338	640.4
131.67	269	516.2	151.11	304	579.2	170.56	339	642.2
132.22	270	518	151.67	305	581	171.11	340	644
132.78	271	519.8	152.22	306	582.8	171.67	341	645.8
133.33	272	521.6	152.78	307	584.6	172.22	342	647.6
133.89	273	523.4	153.33	308	586.4	172.78	343	649.4
134.44	274	525.2	153.89	309	588.2	173.33	344	651.2
135	275	527	154.44	310	590	173.89	345	653
135.56	276	528.8	155	311	591.8	174.44	345	654.8
136.11	277	530.6	155.56	312	593.6	175	347	656.6
136.67	278	532.4	156.11	313	595.4	175.56	348	658.4
137.22	279	534.2	156.67	314	597.2	176.11	349	660.2
137.78	280	536	157.22	315	599	176.67	350	662
138.33	281	537.8	157.78	316	600.8	177.22	351	663.8
138.89	282	539.6	158.33	317	602.6	177.78	352	665.6
139.44	283	541.4	158.89	318	604.4	178.33	353	667.4
140	284	543.2	159.44	319	606.2	178.89	354	669.2
140.56	285	545	160	320	608	179.44	355	671
141.11	286	546.8	160.56	321	609.6	180	356	672.8
141.67	287	548.6	161.11	322	611.6	180.56	357	674.6
142.22	288	550.4	161.67	323	613.4	181.11	358	676.4
142.78	289	552.2	162.22	324	615.2	181.67	359	678.2
143.33	290	554	162.78	325	617	182.22	360	680
143.89	291	555.8	163.33	326	618.8	182.78	361	681.8
144.44	292	557.6	163.89	327	620.6	183.33	362	683.6
145	293	559.4	164.44	328	622.4	183.89	363	685.4
145.6	294	561.2	165	329	624.2	184.44	364	687.2

Sigue

TABLA XX (continuación)

aC	?F o C?	aF	aC	?F o C?	aF	aC	?F o C?	aF
185	365	689	204.44	400	752	223.89	435	815
185.56	366	690.8	205	401	753.8	224.44	436	816.8
186.11	367	692.6	205.56	402	755.6	225	437	818.6
186.67	368	694.4	206.11	403	757.4	225.56	438	820.4
187.22	369	696.2	206.67	404	759.2	226.11	439	822.2
187.78	370	698	207.22	405	761	226.67	440	824
188.33	371	699.8	207.78	406	762.8	227.22	441	825.8
188.89	372	701.6	208.33	407	764.6	227.78	442	827.6
189.44	373	703.4	208.89	408	766.4	228.33	443	829.4
190	374	705.2	209.44	409	768.2	228.89	444	831.2
190.56	375	707	210	410	770	229.44	445	833
191.11	376	708.8	210.56	411	771.8	230	446	834.8
191.67	377	710.8	211.11	412	773.6	230.56	447	836.6
192.22	378	712.4	211.67	413	775.4	231.11	448	838.4
192.78	379	714.2	212.22	414	777.2	231.67	449	840.2
193.33	380	716	212.78	415	779	232.22	450	842
193.89	381	717.8	213.33	416	780.8	232.78	451	843.8
194.44	382	719.6	213.89	417	782.6	233.33	452	845.6
195	383	721.4	214.44	418	784.4	233.89	453	847.4
195.56	384	723.2	215	419	786.2	234.44	454	849.2
196.11	385	725	215.56	420	788	235	455	851
196.67	386	726.8	216.11	421	789.8	235.56	456	852.8
197.22	387	728.6	216.67	422	791.6	236.11	457	854.6
197.78	388	730.4	217.22	423	793.4	236.67	458	856.4
198.33	389	732.2	217.78	424	795.2	237.22	459	858.2
198.89	390	734	218.33	425	797	237.78	460	860
199.44	391	735.8	218.89	426	798.8	238.33	461	861.8
200	392	737.6	219.44	427	800.6	238.89	462	863.6
200.56	393	739.4	220	428	802.4	239.44	463	865.4
201.11	394	741.2	220.56	429	804.2	240	464	867.2
201.67	395	743	221.11	430	806	240.56	465	869
202.22	396	744.8	221.67	431	807.8	241.11	466	870.8
202.78	397	746.6	222.22	432	809.6	241.67	467	872.6
203.33	398	748.4	222.78	433	811.4	242.22	468	874.4
203.89	399	750.2	223.33	434	813.2	242.78	469	876.2

Sigue

TABLA XX (continuación)

aC	?F o C?	aF	aC	?F o C?	aF	aC	?F o C?	aF
243.33	470	878	260	500	932	276.67	530	986
243.89	471	879.8	260.56	501	933.8	277.22	531	987.8
244.44	472	881.6	261.11	502	935.6	277.78	532	989.6
245	473	883.4	261.67	503	937.4	278.33	533	991.4
245.56	474	885.2	262.22	504	939.2	278.89	534	993.2
246.11	475	887	262.78	505	941	279.44	535	995
246.67	476	888.8	263.33	506	942.6	280	536	996.8
247.22	477	890.6	263.89	507	944.6	280.56	537	998.6
247.78	478	892.4	264.44	508	946.4	281.11	538	1000.4
246.33	479	894.2	265	509	948.2	281.67	539	1002.2
248.89	480	896	265.56	510	950	282.22	540	1004
249.44	481	897.8	266.11	511	951.8	282.78	541	1005.8
250	482	899.6	266.67	512	953.6	283.33	542	1007.6
250.56	483	901.4	267.22	513	955.4	283.89	543	1009.4
251.11	484	903.2	267.78	514	957.2	284.44	544	1011.2
251.67	485	905	268.33	515	959	285	545	1013
252.22	486	906.8	268.89	516	960.8	285.56	546	1014.8
252.78	487	908.6	269.44	517	962.6	286.11	547	1016.6
253.33	488	910.4	270	518	964.4	286.67	548	1018.4
253.89	489	912.2	270.56	519	966.2	287.22	549	1020.2
254.44	490	914	271.11	520	968	287.78	550	1022
255	491	915.8	271.67	521	969.8	288.33	551	1023.8
255.56	492	917.6	272.22	522	971.6	288.89	552	1025.6
256.11	493	919.4	272.78	523	973.4	289.44	553	1027.4
256.67	494	921.2	273.33	524	975.2	290	554	1029.2
257.22	495	923	273.89	525	977			
257.78	496	924.8	274.44	526	978.8			
258.33	497	926.6	275	527	980.6			
258.89	498	928.4	275.56	528	982.4			
259.44	499	930.2	276.11	529	984.2			

TABLA XXI
Tabla de factores de conversión

<i>Para convertir de</i>	<i>a</i>	<i>Multiplicar por</i>
Pie cúbico	galones	7.48
Pie cúbico	litros	28.3
Galones	mililitros	3785.0
Gramos	libras	0.0022
Gramos/litro	partes/millón	1000.0
Gramos/litro	libras/galón	0.00834
Litros	pie cúbico	0.0353
Miligramos/litro	partes/millón	1.0
Mililitros	galones	0.000264
Onzas	gramos	28.35
Partes/millón	gramos/litro	0.001
Partes/millón	libras/millón galones	8.34
Libras	gramos	453.59
Libras/galón	gramos/litro	111.83

1 gramo	= 0.035 onzas.
1 kilogramo	= 2,2 lbs.
1 quintal	= 221 lbs.
1 kilómetro	= 0.6 millas.
1 tonelada	= 2.205 libras.
1 hectárea	= 2.5 acres.
1 metro	= 39.4 pulgadas

Múltiplos y submúltiplos

Factor	Prefijo	Símbolo	Factor	Prefijo	Símbolo
10e18	exa	E	10e-1	deci	d
10e15	pata	p	10e-2	cents	c
10e12	tara	T	10e-3	mili	m
10e9	giga	G	10e-6	micro	u
10e6	mega	m	10e-9	nano	n
10e3	kilo	k	10e-12	pico	p
10e2	hecto	h	10e-15	femto	f
10e1	deca	da	10e-18	atto	a

TABLA XXII

Equivalencias de las unidades inglesas y americanas con el sistema métrico

LONGITUD:

Pulgada (inch, in, ")	= 0.0254 m	1 mm	= 0.0394 in
Pie (foot, Ft, ')	= 0.3048 m	1 cm	= 0.3937 in
Yarda (yard, yd)	= 0.9144 m	1 m	= 1.0936 yd
Milla (mile, ml)	= 1.6094 km	1 km	= 0.6114 ml

SUPERFICIE:

Pulgada ² (sq in)	= 6.4516 cm ²	1 cm ²	= 0,135 sq in
Pie ² (sq foot)	= 0.0929 m ²	1 m ²	= 10.7639 sq ft
Yarda ² (sq yd)	= 0.8361 m ²	1 m ²	= 1.1940 sq yd

VOLUMEN:

Pulgada ³ (cu in)	= 16.3872 cm ³	1 cm ³	= 0.0610 cu in
Pie ³ (cu ft)	= 28.3168 dm ³	1 dm ³	= 0.0354 cu ft
Yarda ³ (cu yd)	= 0.7646 m ³	1 m ³	= 1.3080 cu yd

CAPACIDAD:

Pint GB (imperial) (pt)	= 0.5683 L	1 L	= 1.7621 pt (GB)
Pint U.S.A. (U.S. pt)	= 0.4732 L	1 L	= 2.1134 pt U.S.A.
Galón GB (gal GB)	= 4.5459 L	1 L	= 0.2200 gal GB
Galón U.S.A. (U.S. gal)	= 3.7854 L	1 L	= 0.2642 gal U.S.A

PESOS:

Sistema «avoirdupois» (AV)

Grain (gr)	= 1/7000 lb	= 64.7989 mg	1 kg = 15.4327 gr
Ounce (oz)	= 28.35 g		1 kg = 35.274 oz AV
Pound (lb)	= 16 oz	= 0.4536 kg	

Sistema «troy» = apothecary (AP)

Grain (gr)	= 1/7000 lb	= 64.7989 mg	1 g = 32.1512 oz AP
Ounce (oz)	= 480 gr	= 31.103 g	1 Kg = 2.6795 lb AP
Pound (lb)	= 12 oz	= 0.3732 kg	1 g = 15.4327 gr

PRESIONES:

Pulgada de agua	= 0.00254 kg/cm ²	1 kg/cm ² = 14.2227 psi
Libra pulgada cuadrada (psi)	= 0.07031 kg/cm ²	
Libra pie cuadrado (psf)	= 4.8824 kg/m ²	1 kg/m ² = 0.2048 psi