

Schedule for

Tables for use in the calibration of volumetric glassware

UDC 542.3:53.089.6:666.17

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- Association of Clinical Biochemists
- British Laboratory Ware Association
- Department of Health and Social Security
- Department of Trade and Industry (Laboratory of the Government Chemist)
- Department of Trade and Industry (National Weights and Measures Laboratory)
- Glass Manufacturers' Federation
- Institute of Medical Laboratory Sciences
- Medical Sterile Products Association
- Ministry of Defence
- Scientific Glassware Association
- Society of Chemical Industry
- South Western Regional Health Authority

This British Standard, having been prepared under the direction of the Laboratory Apparatus Standards Committee was published under the authority of the Board of BSI and comes into effect on 23 December 1987

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First published September 1952
First revision April 1968
Second revision December 1987

The following BSI references relate to the work on this standard:
Committee reference LBC/27
Draft for comment 86/52986 DC

ISBN 0 580 15952 3

Amendments issued since publication

Amd. No.	Date of issue	Comments

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Publications referred to	Inside back cover

Foreword

This British Standard has been prepared under the direction of the Laboratory Apparatus Standards Committee.

This British Standard was first published in 1952 and was revised in 1968. This revision supersedes BS 1797:1968 which is withdrawn.

Methods for the determination of capacity of volumetric glassware using pure water have been prepared by the International Organization for Standardization (ISO) with the active participation and approval of the United Kingdom. These have been published as ISO 4787 which is identical to BS 6696. However, the information concerning calibration is neither in the easy-to-use form of this British Standard, which is required by the United Kingdom manufacturers of volumetric glassware, nor does BS 6696 contain information on the use of mercury as a calibration liquid.

Although the cubic centimetre (cm³) is used as the unit of volume throughout this British Standard, many items of volumetric glassware are calibrated in millilitres. As the millilitre is commonly used as a special name for the cubic centimetre, in accordance with the International System of Units (SI), this British Standard can also be used to calibrate volumetric glassware when the unit of volume is the millilitre.

The principle difference between BS 1797:1968 and this edition is the use of the kilopascal (kPa) instead of millimetres of mercury (mmHg)¹⁾ as the unit of atmospheric pressure.

NOTE It is recognized that many perfectly satisfactory barometers are in use which are calibrated in millimetres of mercury. For the convenience of such users the kilopascal values given in the tables have been chosen to correspond (within the accuracy of the corrections):

kPa	mmHg
98	735
100	750
102	765
104	780

CAUTION

Attention is drawn to the Health and Safety at Work etc. Act, 1974, and in particular the need for ensuring that the method using mercury referred to in this British Standard is carried out with suitable precautions.

The procedures described in this standard, especially the one using mercury, are intended to be carried out by qualified chemists or other suitably trained and/or supervised personnel. Normal safety precautions should be observed throughout the use of the procedures.

Particular attention is drawn to the need to avoid breathing mercury vapour or contact with the eyes and skin.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 72, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ 1 kPa = 1 kN/m² = 10 mbar = 7.500 60 mmHg.

1 Scope

This British Standard gives tables and equations that enable the delivered or contained capacity, in cubic centimetres, of soda lime and borosilicate volumetric glassware at 20 °C to be determined at temperatures between 5 °C and 35 °C, and air pressures between 98 kPa and 104 kPa²⁾, and when using either distilled or deionized water complying with BS 3978, or mercury, for capacities between 1 cm³ and 2 000 cm³.

Table 1 enables the correction of apparent mass of water for water temperatures between 5 °C and 35 °C.

Table 2 enables the correction of apparent mass of water for air temperatures between 5 °C and 35 °C, and air pressures between 98 kPa and 104 kPa.

Table 3 enables the conversion of apparent mass of mercury into capacity at 20 °C for temperatures between 5 °C and 35 °C.

Table 4 enables the determination of apparent mass of mercury occupied by 1 cm³ at 20 °C.

Appendix A gives examples of the use of the tables.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

WARNING. Mercury is toxic by inhalation. Danger of cumulative effects. Avoid breathing vapour. Avoid contact with eyes and skin.

2 Basis of tables

The tables using water have been computed using the numerical data and equations in Annex B of BS 6696:1986.

In the case of mercury, the values used are based on the mean value of 13545.884 kg/m³ at 20 °C determined by Cook (1961, *Phil. Trans. Roy. Soc. A.*, **254**, 125) and the expansion formula of Beattie et al. (1941, *Proc. Amer. Acad. Arts. Sci.*, **71**, 371).

The coefficient of cubical thermal expansion of glass (in °C⁻¹ × 10⁶) is

27 for soda glass (Table 1A, Table 3A and Table 4A) and

10 for borosilicate (Table 1B, Table 3B and Table 4B).

These are values near to the average for the expansion coefficients of the two types of glass normally employed with making volumetric apparatus in the United Kingdom.

3 Use of the tables

3.1 General

Two sets of tables are included; one set **(A)** relates to vessels made of soda glass and the other set **(B)** to vessels made of borosilicate glass.

Each set of tables is appropriate to the following operations.

a) *Table 1A and Table 1B.* Conversion of the observed mass, in grams, in air of average density, of the distilled or deionized water contained or delivered by a glass vessel at a known temperature, to the capacity of the vessel at 20 °C.

b) *Table 2.* Correction for the departure of the effective air density from the average air density assumed in Table 1A and Table 1B.

NOTE The corrections given in Table 2 need only be applied when high accuracy is desired. The values given apply to either soda or borosilicate glass.

c) *Table 3A and Table 3B.* Conversion of the observed mass in air of the mercury contained or delivered by a glass vessel at a known temperature, to the capacity of the vessel at 20 °C.

d) *Table 4A and Table 4B.* Conversion of the nominal capacity of a glass vessel at 20 °C, to the mass in air of the mercury contained or delivered by it at various temperatures.

The tables allow for the current density of the liquid, the change of capacity of the vessel with temperature, and the buoyancy of the air during the weighing.

3.2 Corrections for standard reference temperature of 27 °C

When it is necessary in tropical countries to work at an ambient temperature considerably above 20 °C, and these countries do not wish to use exclusively the standard reference temperature of 20 °C, it is recommended that they should adopt a temperature of 27 °C (see BS 5898).

²⁾ 1 kPa = 1 kN/m² = 10 mbar = 7.500 60 mmHg.

The effect of raising the temperature of a soda glass vessel from 20 °C to 27 °C is to increase its capacity by about 1 part in 5 000, and is negligible for most types of volumetric glassware. Where such effect is significant, the capacity of a vessel at 27 °C may be obtained from its capacity at 20 °C by adding 0.000 19 cm³/cm³ for soda glass or 0.000 07 cm³/cm³ for borosilicate glass. Thus the correction for a 1 000 cm³ soda glass vessel is + 0.19 cm³. This correction is, of course, applied after the capacity at 20 °C has been obtained by the application of the corrections in Table 1A or Table 1B, and Table 2, or the factor given in Table 3A or Table 3B.

With regard to Table 4A and Table 4B, the mass of mercury contained or delivered at t °C by a vessel of capacity 1 cm³ at 27 °C may be obtained by subtracting from the tabulated mass of mercury, 0.003 g for soda glass (see Table 4A) or 0.001 g for borosilicate glass (see Table 4B).

3.3 Correction for type of glass

If the expansion coefficient of the glass vessel over the temperature range of 5 °C to 35 °C is known to differ from that used in the tables and the temperature of the water is far removed from 20 °C, it may be necessary, when working to the limit of accuracy, to make an adjustment. A comparison of the corresponding entries for the appropriate capacity and temperature in the tables for borosilicate and soda glass will indicate the effect of the difference between the cubical expansion coefficients 0.000 010/°C and 0.000 027/°C. If this shows that an adjustment would be significant, the correction appropriate to the glass concerned may be obtained by linear interpolation between the two entries.

3.4 Corrections for capacities not listed

Separate tables are provided for the capacities in most common use. From the information given in Appendix A it is evident that the entries in the tables are directly proportional to capacity (e.g. the entries in Table 1A/500 are the same as those in Table 1A/50 with the decimal point moved one place to the right).

For capacities not listed, appropriate values may therefore be readily calculated from the tables provided. For many capacities, this can be done simply by moving the decimal point (e.g. values for 0.7 cm³ from Table 1A/7, for 1.5 cm³ from Table 1A/15, for 800 cm³ from Table 1A/80); for other capacities, interpolation is required.

Table 1A/1-5 — Nominal capacities 1–5 cm³ soda glassAdd to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C

Temperature of water t °C	Nominal capacity, cm ³					Temperature of water t °C
	1	2	3	4	5	
5	0.0015	0.003	0.004	0.006	0.007	5
6	0.0015	0.003	0.004	0.006	0.007	6
7	0.0015	0.003	0.004	0.006	0.007	7
8	0.0015	0.003	0.005	0.006	0.008	8
9	0.0015	0.003	0.005	0.006	0.008	9
10	0.0015	0.003	0.005	0.006	0.008	10
11	0.0015	0.0035	0.005	0.007	0.008	11
12	0.002	0.0035	0.005	0.007	0.009	12
13	0.002	0.0035	0.006	0.007	0.009	13
14	0.002	0.004	0.006	0.008	0.010	14
15	0.002	0.004	0.006	0.008	0.010	15
16	0.002	0.0045	0.007	0.009	0.011	16
17	0.0025	0.0045	0.007	0.009	0.012	17
18	0.0025	0.005	0.008	0.010	0.013	18
19	0.0025	0.0055	0.008	0.011	0.013	19
20	0.003	0.0055	0.009	0.011	0.014	20
21	0.003	0.006	0.009	0.012	0.015	21
22	0.003	0.0065	0.010	0.013	0.016	22
23	0.0035	0.007	0.010	0.014	0.017	23
24	0.0035	0.0075	0.011	0.015	0.018	24
25	0.004	0.0075	0.012	0.015	0.019	25
26	0.004	0.008	0.012	0.016	0.021	26
27	0.0045	0.0085	0.013	0.017	0.022	27
28	0.0045	0.009	0.014	0.018	0.023	28
29	0.005	0.0095	0.015	0.019	0.024	29
30	0.005	0.0105	0.015	0.021	0.026	30
31	0.0055	0.011	0.016	0.022	0.027	31
32	0.0055	0.0115	0.017	0.023	0.028	32
33	0.006	0.012	0.018	0.024	0.030	33
34	0.0065	0.0125	0.019	0.025	0.031	34
35	0.0065	0.013	0.020	0.026	0.033	35

NOTE No Table 2 is provided as the values for these capacities are negligible.

**Table 1A/6 — Nominal capacity 6 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/6)

Temperature of water		
t °C	.0	.5
5	0.009	0.009
6	0.009	0.009
7	0.009	0.009
8	0.009	0.009
9	0.009	0.010
10	0.010	0.010
11	0.010	0.010
12	0.011	0.011
13	0.011	0.011
14	0.012	0.012
15	0.013	0.013
16	0.013	0.014
17	0.014	0.015
18	0.015	0.016
19	0.016	0.017
20	0.017	0.018
21	0.018	0.019
22	0.019	0.020
23	0.021	0.021
24	0.022	0.023
25	0.023	0.024
26	0.025	0.025
27	0.026	0.027
28	0.028	0.028
29	0.029	0.030
30	0.031	0.032
31	0.032	0.033
32	0.034	0.035
33	0.036	0.037
34	0.038	0.039
35	0.040	

**Table 2/6 — Nominal capacity 6 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5				+ .001
10				
15				
20				
25				
30				
35	– .001			

**Table 1A/7 — Nominal capacity 7 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/7)

Temp. of water		
t °C	.0	.5
5	0.010	0.010
6	0.010	0.010
7	0.010	0.011
8	0.011	0.011
9	0.011	0.011
10	0.011	0.012
11	0.012	0.012
12	0.012	0.013
13	0.013	0.013
14	0.014	0.014
15	0.015	0.015
16	0.015	0.016
17	0.016	0.017
18	0.018	0.018
19	0.019	0.019
20	0.020	0.021
21	0.021	0.022
22	0.023	0.023
23	0.024	0.025
24	0.026	0.026
25	0.027	0.028
26	0.029	0.030
27	0.030	0.031
28	0.032	0.033
29	0.034	0.035
30	0.036	0.037
31	0.038	0.039
32	0.040	0.041
33	0.042	0.043
34	0.044	0.045
35	0.046	

**Table 2/7 — Nominal capacity 7 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (−) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5				+ .001
10				+ .001
15				
20				
25				
30	− .001			
35	− .001			

**Table 1A/8 — Nominal capacity 8 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/8)

Temp. of water		
t °C	.0	.5
5	0.012	0.012
6	0.012	0.012
7	0.012	0.012
8	0.012	0.012
9	0.013	0.013
10	0.013	0.013
11	0.013	0.014
12	0.014	0.014
13	0.015	0.015
14	0.016	0.016
15	0.017	0.017
16	0.018	0.018
17	0.019	0.019
18	0.020	0.021
19	0.021	0.022
20	0.023	0.023
21	0.024	0.025
22	0.026	0.027
23	0.027	0.028
24	0.029	0.030
25	0.031	0.032
26	0.033	0.034
27	0.035	0.036
28	0.037	0.038
29	0.039	0.040
30	0.041	0.042
31	0.043	0.044
32	0.046	0.047
33	0.048	0.049
34	0.050	0.052
35	0.053	

**Table 2/8 — Nominal capacity 8 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5			+ .001	+ .001
10				+ .001
15				
20				
25				
30	– .001			
35	– .001	– .001		

**Table 1A/9 — Nominal capacity 9 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/9)

Temp. of water		
t °C	.0	.5
5	0.013	0.013
6	0.013	0.013
7	0.013	0.014
8	0.014	0.014
9	0.014	0.014
10	0.015	0.015
11	0.015	0.016
12	0.016	0.016
13	0.017	0.017
14	0.018	0.018
15	0.019	0.019
16	0.020	0.021
17	0.021	0.022
18	0.023	0.023
19	0.024	0.025
20	0.026	0.026
21	0.027	0.028
22	0.029	0.030
23	0.031	0.032
24	0.033	0.034
25	0.035	0.036
26	0.037	0.038
27	0.039	0.040
28	0.041	0.043
29	0.044	0.045
30	0.046	0.047
31	0.049	0.050
32	0.051	0.053
33	0.054	0.055
34	0.057	0.058
35	0.060	

**Table 2/9 — Nominal capacity 9 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (−) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5			+ .001	+ .001
10				+ .001
15				
20				
25				
30	− .001			
35	− .001	− .001	− .001	

**Table 1A/10 — Nominal capacity 10 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/10)

Temp. of water		
t °C	.0	.5
5	0.015	0.015
6	0.015	0.015
7	0.015	0.015
8	0.015	0.015
9	0.016	0.016
10	0.016	0.017
11	0.017	0.017
12	0.018	0.018
13	0.019	0.019
14	0.020	0.020
15	0.021	0.021
16	0.022	0.023
17	0.024	0.024
18	0.025	0.026
19	0.027	0.028
20	0.028	0.029
21	0.030	0.031
22	0.032	0.033
23	0.034	0.035
24	0.036	0.038
25	0.039	0.040
26	0.041	0.042
27	0.043	0.045
28	0.046	0.047
29	0.049	0.050
30	0.051	0.053
31	0.054	0.056
32	0.057	0.058
33	0.060	0.061
34	0.063	0.065
35	0.066	

**Table 2/10 — Nominal capacity 10 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5			+ .001	+ .001
10			+ .001	+ .001
15				
20				
25	– .001			
30	– .001	– .001		
35	– .001	– .001	– .001	

**Table 1A/11 — Nominal capacity 11 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/11)

Temp. of water		
t °C	.0	.5
5	0.016	0.016
6	0.016	0.016
7	0.016	0.017
8	0.017	0.017
9	0.017	0.017
10	0.018	0.018
11	0.019	0.019
12	0.019	0.020
13	0.020	0.021
14	0.022	0.022
15	0.023	0.024
16	0.024	0.025
17	0.026	0.027
18	0.028	0.028
19	0.029	0.030
20	0.031	0.032
21	0.033	0.034
22	0.035	0.037
23	0.038	0.039
24	0.040	0.041
25	0.043	0.044
26	0.045	0.046
27	0.048	0.049
28	0.051	0.052
29	0.053	0.055
30	0.056	0.058
31	0.060	0.061
32	0.063	0.064
33	0.066	0.068
34	0.069	0.071
35	0.073	

**Table 2/11 — Nominal capacity 11 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5			+ .001	+ .001
10			+ .001	+ .001
15				+ .001
20				
25	– .001			
30	– .001	– .001		
35	– .001	– .001		

**Table 1A/15 — Nominal capacity 15 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/15)

Temp. of water		
t °C	.0	.5
5	0.022	0.022
6	0.022	0.022
7	0.022	0.023
8	0.023	0.023
9	0.023	0.024
10	0.024	0.025
11	0.025	0.026
12	0.027	0.027
13	0.028	0.029
14	0.029	0.030
15	0.031	0.032
16	0.033	0.034
17	0.035	0.036
18	0.038	0.039
19	0.040	0.041
20	0.043	0.044
21	0.045	0.047
22	0.048	0.050
23	0.051	0.053
24	0.055	0.056
25	0.058	0.060
26	0.062	0.063
27	0.065	0.067
28	0.069	0.071
29	0.073	0.075
30	0.077	0.079
31	0.081	0.083
32	0.085	0.088
33	0.090	0.092
34	0.094	0.097
35	0.099	

**Table 2/15 — Nominal capacity 15 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5		+ .001	+ .001	+ .001
10			+ .001	+ .001
15				+ .001
20	– .001			
25	– .001			
30	– .001	– .001		
35	– .001	– .001	– .001	

**Table 1A/17.6 — Nominal capacity 17.6 cm³
soda glass**

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C (in conjunction with Table 2/17.6)

Temp. of water		
t °C	.0	.5
5	0.026	0.026
6	0.026	0.026
7	0.026	0.027
8	0.027	0.027
9	0.028	0.028
10	0.028	0.029
11	0.030	0.030
12	0.031	0.032
13	0.033	0.034
14	0.035	0.036
15	0.037	0.038
16	0.039	0.040
17	0.041	0.043
18	0.044	0.046
19	0.047	0.049
20	0.050	0.052
21	0.053	0.055
22	0.057	0.059
23	0.060	0.062
24	0.064	0.066
25	0.068	0.070
26	0.072	0.074
27	0.076	0.079
28	0.081	0.083
29	0.086	0.088
30	0.090	0.093
31	0.095	0.098
32	0.100	0.103
33	0.106	0.108
34	0.111	0.114
35	0.116	

**Table 2/17.6 — Nominal capacity 17.6 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air.
Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5	+ .001	+ .001	+ .001	+ .001
10			+ .001	+ .001
15			+ .001	+ .001
20	– .001			
25	– .001	– .001		
30	– .001	– .001	– .001	
35	– .002	– .001	– .001	– .001

Table 1A/20 — Nominal capacity 20 cm³ soda glass

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C
(in conjunction with Table 2/20)

Temp. of water t °C	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Temp. of water t °C
5	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	5
6	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	6
7	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	7
8	0.030	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.031	8
9	0.031	0.031	0.031	0.032	0.032	0.032	0.032	0.032	0.032	0.032	9
10	0.032	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.034	10
11	0.034	0.034	0.034	0.034	0.034	0.035	0.035	0.035	0.035	0.035	11
12	0.035	0.036	0.036	0.036	0.036	0.036	0.036	0.037	0.037	0.037	12
13	0.037	0.037	0.038	0.038	0.038	0.038	0.038	0.039	0.039	0.039	13
14	0.039	0.040	0.040	0.040	0.040	0.040	0.041	0.041	0.041	0.041	14
15	0.042	0.042	0.042	0.042	0.043	0.043	0.043	0.043	0.044	0.044	15
16	0.044	0.045	0.045	0.045	0.045	0.046	0.046	0.046	0.047	0.047	16
17	0.047	0.047	0.048	0.048	0.048	0.049	0.049	0.049	0.050	0.050	17
18	0.050	0.050	0.051	0.051	0.051	0.052	0.052	0.052	0.053	0.053	18
19	0.053	0.054	0.054	0.054	0.055	0.055	0.055	0.056	0.056	0.057	19
20	0.057	0.057	0.058	0.058	0.058	0.059	0.059	0.059	0.060	0.060	20
21	0.061	0.061	0.061	0.062	0.062	0.063	0.063	0.063	0.064	0.064	21
22	0.064	0.065	0.065	0.066	0.066	0.067	0.067	0.067	0.068	0.068	22
23	0.069	0.069	0.069	0.070	0.070	0.071	0.071	0.072	0.072	0.072	23
24	0.073	0.073	0.074	0.074	0.075	0.075	0.076	0.076	0.076	0.077	24
25	0.077	0.078	0.078	0.079	0.079	0.080	0.080	0.081	0.081	0.082	25
26	0.082	0.083	0.083	0.083	0.084	0.084	0.085	0.085	0.086	0.086	26
27	0.087	0.087	0.088	0.088	0.089	0.089	0.090	0.090	0.091	0.091	27
28	0.092	0.092	0.093	0.094	0.094	0.095	0.095	0.096	0.096	0.097	28
29	0.097	0.098	0.098	0.099	0.099	0.100	0.100	0.101	0.102	0.102	29
30	0.103	0.103	0.104	0.104	0.105	0.105	0.106	0.107	0.107	0.108	30
31	0.108	0.109	0.109	0.110	0.110	0.111	0.112	0.112	0.113	0.113	31
32	0.114	0.115	0.115	0.116	0.116	0.117	0.118	0.118	0.119	0.119	32
33	0.120	0.121	0.121	0.122	0.122	0.123	0.124	0.124	0.125	0.125	33
34	0.126	0.127	0.127	0.128	0.128	0.129	0.130	0.130	0.131	0.132	34
35	0.132										35

**Table 2/20 — Nominal capacity 20 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air. Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5	+ 0.001	+ 0.001	+ 0.001	+ 0.002
10			+ 0.001	+ 0.001
15			+ 0.001	+ 0.001
20	– 0.001			+ 0.001
25	– 0.001	– 0.001		
30	– 0.002	– 0.001	– 0.001	
35	– 0.002	– 0.001	– 0.001	– 0.001

Table 1A/25 — Nominal capacity 25 cm³ soda glass

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C
(in conjunction with Table 2/25)

Temp. of water t °C	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Temp. of water t °C
5	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	5
6	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	6
7	0.037	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	7
8	0.038	0.038	0.038	0.038	0.038	0.039	0.039	0.039	0.039	0.039	8
9	0.039	0.039	0.039	0.039	0.040	0.040	0.040	0.040	0.040	0.040	9
10	0.040	0.041	0.041	0.041	0.041	0.041	0.041	0.042	0.042	0.042	10
11	0.042	0.042	0.043	0.043	0.043	0.043	0.043	0.044	0.044	0.044	11
12	0.044	0.044	0.045	0.045	0.045	0.045	0.046	0.046	0.046	0.046	12
13	0.047	0.047	0.047	0.047	0.048	0.048	0.048	0.048	0.049	0.049	13
14	0.049	0.049	0.050	0.050	0.050	0.051	0.051	0.051	0.051	0.052	14
15	0.052	0.052	0.053	0.053	0.053	0.054	0.054	0.054	0.055	0.055	15
16	0.055	0.056	0.056	0.056	0.057	0.057	0.057	0.058	0.058	0.058	16
17	0.059	0.059	0.060	0.060	0.060	0.061	0.061	0.061	0.062	0.062	17
18	0.063	0.063	0.063	0.064	0.064	0.065	0.065	0.066	0.066	0.066	18
19	0.067	0.067	0.068	0.068	0.068	0.069	0.069	0.070	0.070	0.071	19
20	0.071	0.072	0.072	0.072	0.073	0.073	0.074	0.074	0.075	0.075	20
21	0.076	0.076	0.077	0.077	0.078	0.078	0.079	0.079	0.080	0.080	21
22	0.081	0.081	0.082	0.082	0.083	0.083	0.084	0.084	0.085	0.085	22
23	0.086	0.086	0.087	0.087	0.088	0.088	0.089	0.089	0.090	0.091	23
24	0.091	0.092	0.092	0.093	0.093	0.094	0.094	0.095	0.096	0.096	24
25	0.097	0.097	0.098	0.098	0.099	0.100	0.100	0.101	0.101	0.102	25
26	0.103	0.103	0.104	0.104	0.105	0.106	0.106	0.107	0.107	0.108	26
27	0.109	0.109	0.110	0.111	0.111	0.112	0.112	0.113	0.114	0.114	27
28	0.115	0.116	0.116	0.117	0.118	0.118	0.119	0.120	0.120	0.121	28
29	0.122	0.122	0.123	0.124	0.124	0.125	0.126	0.126	0.127	0.128	29
30	0.128	0.129	0.130	0.130	0.131	0.132	0.132	0.133	0.134	0.135	30
31	0.135	0.136	0.137	0.137	0.138	0.139	0.140	0.140	0.141	0.142	31
32	0.142	0.143	0.144	0.145	0.145	0.146	0.147	0.148	0.148	0.149	32
33	0.150	0.151	0.151	0.152	0.153	0.154	0.154	0.155	0.156	0.157	33
34	0.157	0.158	0.159	0.160	0.161	0.161	0.162	0.163	0.164	0.165	34
35	0.165										35

**Table 2/25 — Nominal capacity 25 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air. Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5	+ 0.001	+ 0.001	+ 0.002	+ 0.002
10		+ 0.001	+ 0.001	+ 0.002
15			+ 0.001	+ 0.001
20	– 0.001			+ 0.001
25	– 0.001	– 0.001		
30	– 0.002	– 0.001	– 0.001	
35	– 0.002	– 0.002	– 0.001	– 0.001

Table 1A/30 — Nominal capacity 30 cm³ soda glass

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C
(in conjunction with Table 2/30)

Temp. of water t °C	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Temp. of water t °C
5	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	5
6	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	6
7	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.046	0.046	7
8	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.047	0.047	0.047	8
9	0.047	0.047	0.047	0.047	0.048	0.048	0.048	0.048	0.048	0.048	9
10	0.049	0.049	0.049	0.049	0.049	0.050	0.050	0.050	0.050	0.050	10
11	0.051	0.051	0.051	0.051	0.052	0.052	0.052	0.052	0.053	0.053	11
12	0.053	0.053	0.054	0.054	0.054	0.054	0.055	0.055	0.055	0.056	12
13	0.056	0.056	0.056	0.057	0.057	0.057	0.058	0.058	0.058	0.059	13
14	0.059	0.059	0.060	0.060	0.060	0.061	0.061	0.061	0.062	0.062	14
15	0.063	0.063	0.063	0.064	0.064	0.064	0.065	0.065	0.066	0.066	15
16	0.066	0.067	0.067	0.068	0.068	0.068	0.069	0.069	0.070	0.070	16
17	0.071	0.071	0.072	0.072	0.072	0.073	0.073	0.074	0.074	0.075	17
18	0.075	0.076	0.076	0.077	0.077	0.078	0.078	0.079	0.079	0.080	18
19	0.080	0.081	0.081	0.082	0.082	0.083	0.083	0.084	0.084	0.085	19
20	0.085	0.086	0.086	0.087	0.088	0.088	0.089	0.089	0.090	0.090	20
21	0.091	0.091	0.092	0.093	0.093	0.094	0.094	0.095	0.096	0.096	21
22	0.097	0.097	0.098	0.099	0.099	0.100	0.100	0.101	0.102	0.102	22
23	0.103	0.103	0.104	0.105	0.105	0.106	0.107	0.107	0.108	0.109	23
24	0.109	0.110	0.111	0.111	0.112	0.113	0.113	0.114	0.115	0.115	24
25	0.116	0.117	0.117	0.118	0.119	0.120	0.120	0.121	0.122	0.122	25
26	0.123	0.124	0.125	0.125	0.126	0.127	0.127	0.128	0.129	0.130	26
27	0.130	0.131	0.132	0.133	0.133	0.134	0.135	0.136	0.136	0.137	27
28	0.138	0.139	0.140	0.140	0.141	0.142	0.143	0.143	0.144	0.145	28
29	0.146	0.147	0.147	0.148	0.149	0.150	0.151	0.151	0.152	0.153	29
30	0.154	0.155	0.156	0.156	0.157	0.158	0.159	0.160	0.161	0.161	30
31	0.162	0.163	0.164	0.165	0.166	0.167	0.167	0.168	0.169	0.170	31
32	0.171	0.172	0.173	0.174	0.174	0.175	0.176	0.177	0.178	0.179	32
33	0.180	0.181	0.182	0.183	0.183	0.184	0.185	0.186	0.187	0.188	33
34	0.189	0.190	0.191	0.192	0.193	0.194	0.195	0.196	0.196	0.197	34
35	0.198										35

**Table 2/30 — Nominal capacity 30 cm³
soda and borosilicate glass**

Allowance for temperature and pressure of air. Add (+) to mass or subtract (–) from it

Temp. of air °C	Pressure of air in kPa			
	98	100	102	104
5	+ 0.001	+ 0.001	+ 0.002	+ 0.003
10		+ 0.001	+ 0.001	+ 0.002
15			+ 0.001	+ 0.001
20	– 0.001			+ 0.001
25	– 0.001	– 0.001		
30	– 0.002	– 0.002	– 0.001	
35	– 0.003	– 0.002	– 0.002	– 0.001

Table 1A/40 — Nominal capacity 40 cm³ soda glass

Add to mass (in g) of distilled or deionized water at t °C to obtain capacity (in cm³) of vessel at 20 °C
(in conjunction with Table 2/40)

Temp. of water t °C	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9	Temp. of water t °C
5	0.060	0.060	0.060	0.060	0.059	0.059	0.059	0.059	0.059	0.059	5
6	0.059	0.059	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	6
7	0.060	0.060	0.060	0.060	0.060	0.060	0.061	0.061	0.061	0.061	7
8	0.061	0.061	0.061	0.061	0.062	0.062	0.062	0.062	0.062	0.062	8
9	0.063	0.063	0.063	0.063	0.063	0.064	0.064	0.064	0.064	0.065	9
10	0.065	0.065	0.065	0.066	0.066	0.066	0.066	0.067	0.067	0.067	10
11	0.067	0.068	0.068	0.068	0.069	0.069	0.069	0.070	0.070	0.070	11
12	0.071	0.071	0.071	0.072	0.072	0.072	0.073	0.073	0.074	0.074	12
13	0.074	0.075	0.075	0.076	0.076	0.076	0.077	0.077	0.078	0.078	13
14	0.079	0.079	0.080	0.080	0.080	0.081	0.081	0.082	0.082	0.083	14
15	0.083	0.084	0.084	0.085	0.085	0.086	0.086	0.087	0.087	0.088	15
16	0.089	0.089	0.090	0.090	0.091	0.091	0.092	0.092	0.093	0.094	16
17	0.094	0.095	0.095	0.096	0.097	0.097	0.098	0.098	0.099	0.100	17
18	0.100	0.101	0.102	0.102	0.103	0.103	0.104	0.105	0.105	0.106	18
19	0.107	0.107	0.108	0.109	0.110	0.110	0.111	0.112	0.112	0.113	19
20	0.114	0.114	0.115	0.116	0.117	0.117	0.118	0.119	0.120	0.120	20
21	0.121	0.122	0.123	0.123	0.124	0.125	0.126	0.127	0.127	0.128	21
22	0.129	0.130	0.131	0.131	0.132	0.133	0.134	0.135	0.135	0.136	22
23	0.137	0.138	0.139	0.140	0.141	0.141	0.142	0.143	0.144	0.145	23
24	0.146	0.147	0.148	0.148	0.149	0.150	0.151	0.152	0.153	0.154	24
25	0.155	0.156	0.157	0.158	0.158	0.159	0.160	0.161	0.162	0.163	25
26	0.164	0.165	0.166	0.167	0.168	0.169	0.170	0.171	0.172	0.173	26
27	0.174	0.175	0.176	0.177	0.178	0.179	0.180	0.181	0.182	0.183	27
28	0.184	0.185	0.186	0.187	0.188	0.189	0.190	0.191	0.192	0.193	28
29	0.194	0.195	0.197	0.198	0.199	0.200	0.201	0.202	0.203	0.204	29
30	0.205	0.206	0.207	0.209	0.210	0.211	0.212	0.213	0.214	0.215	30
31	0.216	0.218	0.219	0.220	0.221	0.222	0.223	0.224	0.226	0.227	31
32	0.228	0.229	0.230	0.231	0.233	0.234	0.235	0.236	0.237	0.239	32
33	0.240	0.241	0.242	0.243	0.245	0.246	0.247	0.248	0.250	0.251	33
34	0.252	0.253	0.254	0.256	0.257	0.258	0.259	0.261	0.262	0.263	34
35	0.265										35