

TABLE A.5 APPROXIMATE PHYSICAL PROPERTIES OF WATER\* AT  
ATMOSPHERIC PRESSURE

Temperature	Density	Specific weight	Dynamic viscosity	Kinematic viscosity	Vapor pressure
	kg/m <sup>3</sup>	N/m <sup>3</sup>	N · s/m <sup>2</sup>	m <sup>2</sup> /s	N/m <sup>2</sup> abs.
0°C	1000	9810	$1.79 \times 10^{-3}$	$1.79 \times 10^{-6}$	611
5°C	1000	9810	$1.51 \times 10^{-3}$	$1.51 \times 10^{-6}$	872
10°C	1000	9810	$1.31 \times 10^{-3}$	$1.31 \times 10^{-6}$	1230
15°C	999	9800	$1.14 \times 10^{-3}$	$1.14 \times 10^{-6}$	1700
20°C	998	9790	$1.00 \times 10^{-3}$	$1.00 \times 10^{-6}$	2340
25°C	997	9781	$8.91 \times 10^{-4}$	$8.94 \times 10^{-7}$	3170
30°C	996	9771	$7.97 \times 10^{-4}$	$8.00 \times 10^{-7}$	4250
35°C	994	9751	$7.20 \times 10^{-4}$	$7.24 \times 10^{-7}$	5630
40°C	992	9732	$6.53 \times 10^{-4}$	$6.58 \times 10^{-7}$	7380
50°C	988	9693	$5.47 \times 10^{-4}$	$5.53 \times 10^{-7}$	12,300
60°C	983	9643	$4.66 \times 10^{-4}$	$4.74 \times 10^{-7}$	20,000
70°C	978	9594	$4.04 \times 10^{-4}$	$4.13 \times 10^{-7}$	31,200
80°C	972	9535	$3.54 \times 10^{-4}$	$3.64 \times 10^{-7}$	47,400
90°C	965	9467	$3.15 \times 10^{-4}$	$3.26 \times 10^{-7}$	70,100
100°C	958	9398	$2.82 \times 10^{-4}$	$2.94 \times 10^{-7}$	101,300
	slugs/ft <sup>3</sup>	lbf/ft <sup>3</sup>	lbf-s/ft <sup>2</sup>	ft <sup>2</sup> /s	psia
40°F	1.94	62.43	$3.23 \times 10^{-5}$	$1.66 \times 10^{-5}$	0.122
50°F	1.94	62.40	$2.73 \times 10^{-5}$	$1.41 \times 10^{-5}$	0.178
60°F	1.94	62.37	$2.36 \times 10^{-5}$	$1.22 \times 10^{-5}$	0.256
70°F	1.94	62.30	$2.05 \times 10^{-5}$	$1.06 \times 10^{-5}$	0.363
80°F	1.93	62.22	$1.80 \times 10^{-5}$	$0.930 \times 10^{-5}$	0.506
100°F	1.93	62.00	$1.42 \times 10^{-5}$	$0.739 \times 10^{-5}$	0.949
120°F	1.92	61.72	$1.17 \times 10^{-5}$	$0.609 \times 10^{-5}$	1.69
140°F	1.91	61.38	$0.981 \times 10^{-5}$	$0.514 \times 10^{-5}$	2.89
160°F	1.90	61.00	$0.838 \times 10^{-5}$	$0.442 \times 10^{-5}$	4.74
180°F	1.88	60.58	$0.726 \times 10^{-5}$	$0.385 \times 10^{-5}$	7.51
200°F	1.87	60.12	$0.637 \times 10^{-5}$	$0.341 \times 10^{-5}$	11.53
212°F	1.86	59.83	$0.593 \times 10^{-5}$	$0.319 \times 10^{-5}$	14.70

\*Notes: (1) Bulk modulus  $E_v$  of water is approximately 2.2 G Pa ( $3.2 \times 10^5$  psi); (2) Water-air surface tension is approximately  $7.3 \times 10^{-2}$  N/m ( $5 \times 10^{-3}$  lbf/ft) from 10°C to 50°C.

SOURCE: Reprinted with permission from R. E. Bolz and G. L. Tuve, *Handbook of Tables for Applied Engineering Science*, CRC Press, Inc., Cleveland, 1973. Copyright 1973 by The Chemical Rubber Co., CRC Press, Inc.