

**Table A-2 Properties of Saturated Water (Liquid–Vapor): Temperature Table**

Pressure Conversions:  
1 bar = 0.1 MPa  
= 10<sup>2</sup> kPa

| Temp.<br>°C | Press.<br>bar | Specific Volume<br>m <sup>3</sup> /kg |                        | Internal Energy<br>kJ/kg |                        | Enthalpy<br>kJ/kg       |                   |                        | Entropy<br>kJ/kg · K    |                        | Temp.<br>°C |
|-------------|---------------|---------------------------------------|------------------------|--------------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|------------------------|-------------|
|             |               | Sat.<br>Liquid<br>$v_f \times 10^3$   | Sat.<br>Vapor<br>$v_g$ | Sat.<br>Liquid<br>$u_f$  | Sat.<br>Vapor<br>$u_g$ | Sat.<br>Liquid<br>$h_f$ | Evap.<br>$h_{fg}$ | Sat.<br>Vapor<br>$h_g$ | Sat.<br>Liquid<br>$s_f$ | Sat.<br>Vapor<br>$s_g$ |             |
| .01         | 0.00611       | 1.0002                                | 206.136                | 0.00                     | 2375.3                 | 0.01                    | 2501.3            | 2501.4                 | 0.0000                  | 9.1562                 | .01         |
| 4           | 0.00813       | 1.0001                                | 157.232                | 16.77                    | 2380.9                 | 16.78                   | 2491.9            | 2508.7                 | 0.0610                  | 9.0514                 | 4           |
| 5           | 0.00872       | 1.0001                                | 147.120                | 20.97                    | 2382.3                 | 20.98                   | 2489.6            | 2510.6                 | 0.0761                  | 9.0257                 | 5           |
| 6           | 0.00935       | 1.0001                                | 137.734                | 25.19                    | 2383.6                 | 25.20                   | 2487.2            | 2512.4                 | 0.0912                  | 9.0003                 | 6           |
| 8           | 0.01072       | 1.0002                                | 120.917                | 33.59                    | 2386.4                 | 33.60                   | 2482.5            | 2516.1                 | 0.1212                  | 8.9501                 | 8           |
| 10          | 0.01228       | 1.0004                                | 106.379                | 42.00                    | 2389.2                 | 42.01                   | 2477.7            | 2519.8                 | 0.1510                  | 8.9008                 | 10          |
| 11          | 0.01312       | 1.0004                                | 99.857                 | 46.20                    | 2390.5                 | 46.20                   | 2475.4            | 2521.6                 | 0.1658                  | 8.8765                 | 11          |
| 12          | 0.01402       | 1.0005                                | 93.784                 | 50.41                    | 2391.9                 | 50.41                   | 2473.0            | 2523.4                 | 0.1806                  | 8.8524                 | 12          |
| 13          | 0.01497       | 1.0007                                | 88.124                 | 54.60                    | 2393.3                 | 54.60                   | 2470.7            | 2525.3                 | 0.1953                  | 8.8285                 | 13          |
| 14          | 0.01598       | 1.0008                                | 82.848                 | 58.79                    | 2394.7                 | 58.80                   | 2468.3            | 2527.1                 | 0.2099                  | 8.8048                 | 14          |
| 15          | 0.01705       | 1.0009                                | 77.926                 | 62.99                    | 2396.1                 | 62.99                   | 2465.9            | 2528.9                 | 0.2245                  | 8.7814                 | 15          |
| 16          | 0.01818       | 1.0011                                | 73.333                 | 67.18                    | 2397.4                 | 67.19                   | 2463.6            | 2530.8                 | 0.2390                  | 8.7582                 | 16          |
| 17          | 0.01938       | 1.0012                                | 69.044                 | 71.38                    | 2398.8                 | 71.38                   | 2461.2            | 2532.6                 | 0.2535                  | 8.7351                 | 17          |
| 18          | 0.02064       | 1.0014                                | 65.038                 | 75.57                    | 2400.2                 | 75.58                   | 2458.8            | 2534.4                 | 0.2679                  | 8.7123                 | 18          |
| 19          | 0.02198       | 1.0016                                | 61.293                 | 79.76                    | 2401.6                 | 79.77                   | 2456.5            | 2536.2                 | 0.2823                  | 8.6897                 | 19          |
| 20          | 0.02339       | 1.0018                                | 57.791                 | 83.95                    | 2402.9                 | 83.96                   | 2454.1            | 2538.1                 | 0.2966                  | 8.6672                 | 20          |
| 21          | 0.02487       | 1.0020                                | 54.514                 | 88.14                    | 2404.3                 | 88.14                   | 2451.8            | 2539.9                 | 0.3109                  | 8.6450                 | 21          |
| 22          | 0.02645       | 1.0022                                | 51.447                 | 92.32                    | 2405.7                 | 92.33                   | 2449.4            | 2541.7                 | 0.3251                  | 8.6229                 | 22          |
| 23          | 0.02810       | 1.0024                                | 48.574                 | 96.51                    | 2407.0                 | 96.52                   | 2447.0            | 2543.5                 | 0.3393                  | 8.6011                 | 23          |
| 24          | 0.02985       | 1.0027                                | 45.883                 | 100.70                   | 2408.4                 | 100.70                  | 2444.7            | 2545.4                 | 0.3534                  | 8.5794                 | 24          |
| 25          | 0.03169       | 1.0029                                | 43.360                 | 104.88                   | 2409.8                 | 104.89                  | 2442.3            | 2547.2                 | 0.3674                  | 8.5580                 | 25          |
| 26          | 0.03363       | 1.0032                                | 40.994                 | 109.06                   | 2411.1                 | 109.07                  | 2439.9            | 2549.0                 | 0.3814                  | 8.5367                 | 26          |
| 27          | 0.03567       | 1.0035                                | 38.774                 | 113.25                   | 2412.5                 | 113.25                  | 2437.6            | 2550.8                 | 0.3954                  | 8.5156                 | 27          |
| 28          | 0.03782       | 1.0037                                | 36.690                 | 117.42                   | 2413.9                 | 117.43                  | 2435.2            | 2552.6                 | 0.4093                  | 8.4946                 | 28          |
| 29          | 0.04008       | 1.0040                                | 34.733                 | 121.60                   | 2415.2                 | 121.61                  | 2432.8            | 2554.5                 | 0.4231                  | 8.4739                 | 29          |
| 30          | 0.04246       | 1.0043                                | 32.894                 | 125.78                   | 2416.6                 | 125.79                  | 2430.5            | 2556.3                 | 0.4369                  | 8.4533                 | 30          |
| 31          | 0.04496       | 1.0046                                | 31.165                 | 129.96                   | 2418.0                 | 129.97                  | 2428.1            | 2558.1                 | 0.4507                  | 8.4329                 | 31          |
| 32          | 0.04759       | 1.0050                                | 29.540                 | 134.14                   | 2419.3                 | 134.15                  | 2425.7            | 2559.9                 | 0.4644                  | 8.4127                 | 32          |
| 33          | 0.05034       | 1.0053                                | 28.011                 | 138.32                   | 2420.7                 | 138.33                  | 2423.4            | 2561.7                 | 0.4781                  | 8.3927                 | 33          |
| 34          | 0.05324       | 1.0056                                | 26.571                 | 142.50                   | 2422.0                 | 142.50                  | 2421.0            | 2563.5                 | 0.4917                  | 8.3728                 | 34          |
| 35          | 0.05628       | 1.0060                                | 25.216                 | 146.67                   | 2423.4                 | 146.68                  | 2418.6            | 2565.3                 | 0.5053                  | 8.3531                 | 35          |
| 36          | 0.05947       | 1.0063                                | 23.940                 | 150.85                   | 2424.7                 | 150.86                  | 2416.2            | 2567.1                 | 0.5188                  | 8.3336                 | 36          |
| 38          | 0.06632       | 1.0071                                | 21.602                 | 159.20                   | 2427.4                 | 159.21                  | 2411.5            | 2570.7                 | 0.5458                  | 8.2950                 | 38          |
| 40          | 0.07384       | 1.0078                                | 19.523                 | 167.56                   | 2430.1                 | 167.57                  | 2406.7            | 2574.3                 | 0.5725                  | 8.2570                 | 40          |
| 45          | 0.09593       | 1.0099                                | 15.258                 | 188.44                   | 2436.8                 | 188.45                  | 2394.8            | 2583.2                 | 0.6387                  | 8.1648                 | 45          |

Table A-2 (Continued)

| Temp.<br>°C | Press.<br>bar | Specific Volume<br>m <sup>3</sup> /kg |                        | Internal Energy<br>kJ/kg |                        | Enthalpy<br>kJ/kg       |                   |                        | Entropy<br>kJ/kg · K    |                        | Temp.<br>°C |
|-------------|---------------|---------------------------------------|------------------------|--------------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|------------------------|-------------|
|             |               | Sat.<br>Liquid<br>$v_f \times 10^3$   | Sat.<br>Vapor<br>$v_g$ | Sat.<br>Liquid<br>$u_f$  | Sat.<br>Vapor<br>$u_g$ | Sat.<br>Liquid<br>$h_f$ | Evap.<br>$h_{fg}$ | Sat.<br>Vapor<br>$h_g$ | Sat.<br>Liquid<br>$s_f$ | Sat.<br>Vapor<br>$s_g$ |             |
| 50          | .1235         | 1.0121                                | 12.032                 | 209.32                   | 2443.5                 | 209.33                  | 2382.7            | 2592.1                 | .7038                   | 8.0763                 | 50          |
| 55          | .1576         | 1.0146                                | 9.568                  | 230.21                   | 2450.1                 | 230.23                  | 2370.7            | 2600.9                 | .7679                   | 7.9913                 | 55          |
| 60          | .1994         | 1.0172                                | 7.671                  | 251.11                   | 2456.6                 | 251.13                  | 2358.5            | 2609.6                 | .8312                   | 7.9096                 | 60          |
| 65          | .2503         | 1.0199                                | 6.197                  | 272.02                   | 2463.1                 | 272.06                  | 2346.2            | 2618.3                 | .8935                   | 7.8310                 | 65          |
| 70          | .3119         | 1.0228                                | 5.042                  | 292.95                   | 2469.6                 | 292.98                  | 2333.8            | 2626.8                 | .9549                   | 7.7553                 | 70          |
| 75          | .3858         | 1.0259                                | 4.131                  | 313.90                   | 2475.9                 | 313.93                  | 2321.4            | 2635.3                 | 1.0155                  | 7.6824                 | 75          |
| 80          | .4739         | 1.0291                                | 3.407                  | 334.86                   | 2482.2                 | 334.91                  | 2308.8            | 2643.7                 | 1.0753                  | 7.6122                 | 80          |
| 85          | .5783         | 1.0325                                | 2.828                  | 355.84                   | 2488.4                 | 355.90                  | 2296.0            | 2651.9                 | 1.1343                  | 7.5445                 | 85          |
| 90          | .7014         | 1.0360                                | 2.361                  | 376.85                   | 2494.5                 | 376.92                  | 2283.2            | 2660.1                 | 1.1925                  | 7.4791                 | 90          |
| 95          | .8455         | 1.0397                                | 1.982                  | 397.88                   | 2500.6                 | 397.96                  | 2270.2            | 2668.1                 | 1.2500                  | 7.4159                 | 95          |
| 100         | 1.014         | 1.0435                                | 1.673                  | 418.94                   | 2506.5                 | 419.04                  | 2257.0            | 2676.1                 | 1.3069                  | 7.3549                 | 100         |
| 110         | 1.433         | 1.0516                                | 1.210                  | 461.14                   | 2518.1                 | 461.30                  | 2230.2            | 2691.5                 | 1.4185                  | 7.2387                 | 110         |
| 120         | 1.985         | 1.0603                                | 0.8919                 | 503.50                   | 2529.3                 | 503.71                  | 2202.6            | 2706.3                 | 1.5276                  | 7.1296                 | 120         |
| 130         | 2.701         | 1.0697                                | 0.6685                 | 546.02                   | 2539.9                 | 546.31                  | 2174.2            | 2720.5                 | 1.6344                  | 7.0269                 | 130         |
| 140         | 3.613         | 1.0797                                | 0.5089                 | 588.74                   | 2550.0                 | 589.13                  | 2144.7            | 2733.9                 | 1.7391                  | 6.9299                 | 140         |
| 150         | 4.758         | 1.0905                                | 0.3928                 | 631.68                   | 2559.5                 | 632.20                  | 2114.3            | 2746.5                 | 1.8418                  | 6.8379                 | 150         |
| 160         | 6.178         | 1.1020                                | 0.3071                 | 674.86                   | 2568.4                 | 675.55                  | 2082.6            | 2758.1                 | 1.9427                  | 6.7502                 | 160         |
| 170         | 7.917         | 1.1143                                | 0.2428                 | 718.33                   | 2576.5                 | 719.21                  | 2049.5            | 2768.7                 | 2.0419                  | 6.6663                 | 170         |
| 180         | 10.02         | 1.1274                                | 0.1941                 | 762.09                   | 2583.7                 | 763.22                  | 2015.0            | 2778.2                 | 2.1396                  | 6.5857                 | 180         |
| 190         | 12.54         | 1.1414                                | 0.1565                 | 806.19                   | 2590.0                 | 807.62                  | 1978.8            | 2786.4                 | 2.2359                  | 6.5079                 | 190         |
| 200         | 15.54         | 1.1565                                | 0.1274                 | 850.65                   | 2595.3                 | 852.45                  | 1940.7            | 2793.2                 | 2.3309                  | 6.4323                 | 200         |
| 210         | 19.06         | 1.1726                                | 0.1044                 | 895.53                   | 2599.5                 | 897.76                  | 1900.7            | 2798.5                 | 2.4248                  | 6.3585                 | 210         |
| 220         | 23.18         | 1.1900                                | 0.08619                | 940.87                   | 2602.4                 | 943.62                  | 1858.5            | 2802.1                 | 2.5178                  | 6.2861                 | 220         |
| 230         | 27.95         | 1.2088                                | 0.07158                | 986.74                   | 2603.9                 | 990.12                  | 1813.8            | 2804.0                 | 2.6099                  | 6.2146                 | 230         |
| 240         | 33.44         | 1.2291                                | 0.05976                | 1033.2                   | 2604.0                 | 1037.3                  | 1766.5            | 2803.8                 | 2.7015                  | 6.1437                 | 240         |
| 250         | 39.73         | 1.2512                                | 0.05013                | 1080.4                   | 2602.4                 | 1085.4                  | 1716.2            | 2801.5                 | 2.7927                  | 6.0730                 | 250         |
| 260         | 46.88         | 1.2755                                | 0.04221                | 1128.4                   | 2599.0                 | 1134.4                  | 1662.5            | 2796.6                 | 2.8838                  | 6.0019                 | 260         |
| 270         | 54.99         | 1.3023                                | 0.03564                | 1177.4                   | 2593.7                 | 1184.5                  | 1605.2            | 2789.7                 | 2.9751                  | 5.9301                 | 270         |
| 280         | 64.12         | 1.3321                                | 0.03017                | 1227.5                   | 2586.1                 | 1236.0                  | 1543.6            | 2779.6                 | 3.0668                  | 5.8571                 | 280         |
| 290         | 74.36         | 1.3656                                | 0.02557                | 1278.9                   | 2576.0                 | 1289.1                  | 1477.1            | 2766.2                 | 3.1594                  | 5.7821                 | 290         |
| 300         | 85.81         | 1.4036                                | 0.02167                | 1332.0                   | 2563.0                 | 1344.0                  | 1404.9            | 2749.0                 | 3.2534                  | 5.7045                 | 300         |
| 320         | 112.7         | 1.4988                                | 0.01549                | 1444.6                   | 2525.5                 | 1461.5                  | 1238.6            | 2700.1                 | 3.4480                  | 5.5362                 | 320         |
| 340         | 145.9         | 1.6379                                | 0.01080                | 1570.3                   | 2464.6                 | 1594.2                  | 1027.9            | 2622.0                 | 3.6594                  | 5.3357                 | 340         |
| 360         | 186.5         | 1.8925                                | 0.006945               | 1725.2                   | 2351.5                 | 1760.5                  | 720.5             | 2481.0                 | 3.9147                  | 5.0526                 | 360         |
| 374.14      | 220.9         | 3.155                                 | 0.003155               | 2029.6                   | 2029.6                 | 2099.3                  | 0                 | 2099.3                 | 4.4298                  | 4.4298                 | 374.14      |

Source: Tables A-2 through A-5 are extracted from J. H. Keenan, F. G. Keyes, P. G. Hill, and J. G. Moore, *Steam Tables*, Wiley, New York, 1969.

Table A-3

## Properties of Saturated Water (Liquid–Vapor): Pressure Table

Pressure Conversions:  
1 bar = 0.1 MPa  
= 10<sup>2</sup> kPa

| Press.<br>bar | Temp.<br>°C | Specific Volume<br>m <sup>3</sup> /kg |                        | Internal Energy<br>kJ/kg |                        | Enthalpy<br>kJ/kg       |                   |                        | Entropy<br>kJ/kg · K    |                        | Press.<br>bar |
|---------------|-------------|---------------------------------------|------------------------|--------------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|------------------------|---------------|
|               |             | Sat.<br>Liquid<br>$v_f \times 10^3$   | Sat.<br>Vapor<br>$v_g$ | Sat.<br>Liquid<br>$u_f$  | Sat.<br>Vapor<br>$u_g$ | Sat.<br>Liquid<br>$h_f$ | Evap.<br>$h_{fg}$ | Sat.<br>Vapor<br>$h_g$ | Sat.<br>Liquid<br>$s_f$ | Sat.<br>Vapor<br>$s_g$ |               |
| 0.04          | 28.96       | 1.0040                                | 34.800                 | 121.45                   | 2415.2                 | 121.46                  | 2432.9            | 2554.4                 | 0.4226                  | 8.4746                 | 0.04          |
| 0.06          | 36.16       | 1.0064                                | 23.739                 | 151.53                   | 2425.0                 | 151.53                  | 2415.9            | 2567.4                 | 0.5210                  | 8.3304                 | 0.06          |
| 0.08          | 41.51       | 1.0084                                | 18.103                 | 173.87                   | 2432.2                 | 173.88                  | 2403.1            | 2577.0                 | 0.5926                  | 8.2287                 | 0.08          |
| 0.10          | 45.81       | 1.0102                                | 14.674                 | 191.82                   | 2437.9                 | 191.83                  | 2392.8            | 2584.7                 | 0.6493                  | 8.1502                 | 0.10          |
| 0.20          | 60.06       | 1.0172                                | 7.649                  | 251.38                   | 2456.7                 | 251.40                  | 2358.3            | 2609.7                 | 0.8320                  | 7.9085                 | 0.20          |
| 0.30          | 69.10       | 1.0223                                | 5.229                  | 289.20                   | 2468.4                 | 289.23                  | 2336.1            | 2625.3                 | 0.9439                  | 7.7686                 | 0.30          |
| 0.40          | 75.87       | 1.0265                                | 3.993                  | 317.53                   | 2477.0                 | 317.58                  | 2319.2            | 2636.8                 | 1.0259                  | 7.6700                 | 0.40          |
| 0.50          | 81.33       | 1.0300                                | 3.240                  | 340.44                   | 2483.9                 | 340.49                  | 2305.4            | 2645.9                 | 1.0910                  | 7.5939                 | 0.50          |
| 0.60          | 85.94       | 1.0331                                | 2.732                  | 359.79                   | 2489.6                 | 359.86                  | 2293.6            | 2653.5                 | 1.1453                  | 7.5320                 | 0.60          |
| 0.70          | 89.95       | 1.0360                                | 2.365                  | 376.63                   | 2494.5                 | 376.70                  | 2283.3            | 2660.0                 | 1.1919                  | 7.4797                 | 0.70          |
| 0.80          | 93.50       | 1.0380                                | 2.087                  | 391.58                   | 2498.8                 | 391.66                  | 2274.1            | 2665.8                 | 1.2329                  | 7.4346                 | 0.80          |
| 0.90          | 96.71       | 1.0410                                | 1.869                  | 405.06                   | 2502.6                 | 405.15                  | 2265.7            | 2670.9                 | 1.2695                  | 7.3949                 | 0.90          |
| 1.00          | 99.63       | 1.0432                                | 1.694                  | 417.36                   | 2506.1                 | 417.46                  | 2258.0            | 2675.5                 | 1.3026                  | 7.3594                 | 1.00          |
| 1.50          | 111.4       | 1.0528                                | 1.159                  | 466.94                   | 2519.7                 | 467.11                  | 2226.5            | 2693.6                 | 1.4336                  | 7.2233                 | 1.50          |
| 2.00          | 120.2       | 1.0605                                | 0.8857                 | 504.49                   | 2529.5                 | 504.70                  | 2201.9            | 2706.7                 | 1.5301                  | 7.1271                 | 2.00          |
| 2.50          | 127.4       | 1.0672                                | 0.7187                 | 535.10                   | 2537.2                 | 535.37                  | 2181.5            | 2716.9                 | 1.6072                  | 7.0527                 | 2.50          |
| 3.00          | 133.6       | 1.0732                                | 0.6058                 | 561.15                   | 2543.6                 | 561.47                  | 2163.8            | 2725.3                 | 1.6718                  | 6.9919                 | 3.00          |
| 3.50          | 138.9       | 1.0786                                | 0.5243                 | 583.95                   | 2546.9                 | 584.33                  | 2148.1            | 2732.4                 | 1.7275                  | 6.9405                 | 3.50          |
| 4.00          | 143.6       | 1.0836                                | 0.4625                 | 604.31                   | 2553.6                 | 604.74                  | 2133.8            | 2738.6                 | 1.7766                  | 6.8959                 | 4.00          |
| 4.50          | 147.9       | 1.0882                                | 0.4140                 | 622.25                   | 2557.6                 | 623.25                  | 2120.7            | 2743.9                 | 1.8207                  | 6.8565                 | 4.50          |
| 5.00          | 151.9       | 1.0926                                | 0.3749                 | 639.68                   | 2561.2                 | 640.23                  | 2108.5            | 2748.7                 | 1.8607                  | 6.8212                 | 5.00          |
| 6.00          | 158.9       | 1.1006                                | 0.3157                 | 669.90                   | 2567.4                 | 670.56                  | 2086.3            | 2756.8                 | 1.9312                  | 6.7600                 | 6.00          |
| 7.00          | 165.0       | 1.1080                                | 0.2729                 | 696.44                   | 2572.5                 | 697.22                  | 2066.3            | 2763.5                 | 1.9922                  | 6.7080                 | 7.00          |
| 8.00          | 170.4       | 1.1148                                | 0.2404                 | 720.22                   | 2576.8                 | 721.11                  | 2048.0            | 2769.1                 | 2.0462                  | 6.6628                 | 8.00          |
| 9.00          | 175.4       | 1.1212                                | 0.2150                 | 741.83                   | 2580.5                 | 742.83                  | 2031.1            | 2773.9                 | 2.0946                  | 6.6226                 | 9.00          |
| 10.0          | 179.9       | 1.1273                                | 0.1944                 | 761.68                   | 2583.6                 | 762.81                  | 2015.3            | 2778.1                 | 2.1387                  | 6.5863                 | 10.0          |
| 15.0          | 198.3       | 1.1539                                | 0.1318                 | 843.16                   | 2594.5                 | 844.84                  | 1947.3            | 2792.2                 | 2.3150                  | 6.4448                 | 15.0          |
| 20.0          | 212.4       | 1.1767                                | 0.09963                | 906.44                   | 2600.3                 | 908.79                  | 1890.7            | 2799.5                 | 2.4474                  | 6.3409                 | 20.0          |
| 25.0          | 224.0       | 1.1973                                | 0.07998                | 959.11                   | 2603.1                 | 962.11                  | 1841.0            | 2803.1                 | 2.5547                  | 6.2575                 | 25.0          |
| 30.0          | 233.9       | 1.2165                                | 0.06668                | 1004.8                   | 2604.1                 | 1008.4                  | 1795.7            | 2804.2                 | 2.6457                  | 6.1869                 | 30.0          |
| 35.0          | 242.6       | 1.2347                                | 0.05707                | 1045.4                   | 2603.7                 | 1049.8                  | 1753.7            | 2803.4                 | 2.7253                  | 6.1253                 | 35.0          |
| 40.0          | 250.4       | 1.2522                                | 0.04978                | 1082.3                   | 2602.3                 | 1087.3                  | 1714.1            | 2801.4                 | 2.7964                  | 6.0701                 | 40.0          |
| 45.0          | 257.5       | 1.2692                                | 0.04406                | 1116.2                   | 2600.1                 | 1121.9                  | 1676.4            | 2798.3                 | 2.8610                  | 6.0199                 | 45.0          |
| 50.0          | 264.0       | 1.2859                                | 0.03944                | 1147.8                   | 2597.1                 | 1154.2                  | 1640.1            | 2794.3                 | 2.9202                  | 5.9734                 | 50.0          |
| 60.0          | 275.6       | 1.3187                                | 0.03244                | 1205.4                   | 2589.7                 | 1213.4                  | 1571.0            | 2784.3                 | 3.0267                  | 5.8892                 | 60.0          |
| 70.0          | 285.9       | 1.3513                                | 0.02737                | 1257.6                   | 2580.5                 | 1267.0                  | 1505.1            | 2772.1                 | 3.1211                  | 5.8133                 | 70.0          |
| 80.0          | 295.1       | 1.3842                                | 0.02352                | 1305.6                   | 2569.8                 | 1316.6                  | 1441.3            | 2758.0                 | 3.2068                  | 5.7432                 | 80.0          |
| 90.0          | 303.4       | 1.4178                                | 0.02048                | 1350.5                   | 2557.8                 | 1363.3                  | 1378.9            | 2742.1                 | 3.2858                  | 5.6772                 | 90.0          |
| 100.          | 311.1       | 1.4524                                | 0.01803                | 1393.0                   | 2544.4                 | 1407.6                  | 1317.1            | 2724.7                 | 3.3596                  | 5.6141                 | 100.          |
| 110.          | 318.2       | 1.4886                                | 0.01599                | 1433.7                   | 2529.8                 | 1450.1                  | 1255.5            | 2705.6                 | 3.4295                  | 5.5527                 | 110.          |

Table A-3 (Continued)

| Press.<br>bar | Temp.<br>°C | Specific Volume<br>m <sup>3</sup> /kg |                        | Internal Energy<br>kJ/kg |                        | Enthalpy<br>kJ/kg       |                   |                        | Entropy<br>kJ/kg · K    |                        | Press.<br>bar |
|---------------|-------------|---------------------------------------|------------------------|--------------------------|------------------------|-------------------------|-------------------|------------------------|-------------------------|------------------------|---------------|
|               |             | Sat.<br>Liquid<br>$v_f \times 10^3$   | Sat.<br>Vapor<br>$v_g$ | Sat.<br>Liquid<br>$u_f$  | Sat.<br>Vapor<br>$u_g$ | Sat.<br>Liquid<br>$h_f$ | Evap.<br>$h_{fg}$ | Sat.<br>Vapor<br>$h_g$ | Sat.<br>Liquid<br>$s_f$ | Sat.<br>Vapor<br>$s_g$ |               |
| 120.          | 324.8       | 1.5267                                | 0.01426                | 1473.0                   | 2513.7                 | 1491.3                  | 1193.6            | 2684.9                 | 3.4962                  | 5.4924                 | 120.          |
| 130.          | 330.9       | 1.5671                                | 0.01278                | 1511.1                   | 2496.1                 | 1531.5                  | 1130.7            | 2662.2                 | 3.5606                  | 5.4323                 | 130.          |
| 140.          | 336.8       | 1.6107                                | 0.01149                | 1548.6                   | 2476.8                 | 1571.1                  | 1066.5            | 2637.6                 | 3.6232                  | 5.3717                 | 140.          |
| 150.          | 342.2       | 1.6581                                | 0.01034                | 1585.6                   | 2455.5                 | 1610.5                  | 1000.0            | 2610.5                 | 3.6848                  | 5.3098                 | 150.          |
| 160.          | 347.4       | 1.7107                                | 0.009306               | 1622.7                   | 2431.7                 | 1650.1                  | 930.6             | 2580.6                 | 3.7461                  | 5.2455                 | 160.          |
| 170.          | 352.4       | 1.7702                                | 0.008364               | 1660.2                   | 2405.0                 | 1690.3                  | 856.9             | 2547.2                 | 3.8079                  | 5.1777                 | 170.          |
| 180.          | 357.1       | 1.8397                                | 0.007489               | 1698.9                   | 2374.3                 | 1732.0                  | 777.1             | 2509.1                 | 3.8715                  | 5.1044                 | 180.          |
| 190.          | 361.5       | 1.9243                                | 0.006657               | 1739.9                   | 2338.1                 | 1776.5                  | 688.0             | 2464.5                 | 3.9388                  | 5.0228                 | 190.          |
| 200.          | 365.8       | 2.036                                 | 0.005834               | 1785.6                   | 2293.0                 | 1826.3                  | 583.4             | 2409.7                 | 4.0139                  | 4.9269                 | 200.          |
| 220.9         | 374.1       | 3.155                                 | 0.003155               | 2029.6                   | 2029.6                 | 2099.3                  | 0                 | 2099.3                 | 4.4298                  | 4.4298                 | 220.9         |