TABLE 2. THERMODYNAMIC PROPERTIES OF WATER AT SATURATION[a] (Continued)

| FAHR. TEMP. $t$(F) | ABSOLUTE PRESSURE $p_s \times 10^3$ | | SPECIFIC VOLUME, CU FT PER LB | | | ENTHALPY, BTU PER LB | | | ENTROPY, BTU PER (LB) (°F) | | | FAHR. TEMP. $t$(F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lb/Sq In. | In. Hg | Sat. Solid $v_i$ | Evap. $v_{ig} \times 10^{-4}$ | Sat. Vapor $v_g \times 10^{-4}$ | Sat. Solid $h_i$ | Evap. $h_{ig}$ | Sat. Vapor $h_g$ | Sat. Solid $s_i$ | Evap. $s_{ig}$ | Sat. Vapor $s_g$ | |
| −32 | 0.3049 | 0.6209 | 0.01738 | 8.355 | 8.355 | −173.57 | 1220.52 | 1046.95 | −0.3573 | 2.8538 | 2.4965 | −32 |
| −31 | 0.3239 | 0.6595 | 0.01738 | 7.883 | 7.883 | −173.13 | 1220.53 | 1047.40 | −0.3562 | 2.8470 | 2.4908 | −31 |
| −30 | 0.3440 | 0.7003 | 0.01738 | 7.441 | 7.441 | −172.68 | 1220.52 | 1047.84 | −0.3552 | 2.8405 | 2.4853 | −30 |
| −29 | 0.3652 | 0.7435 | 0.01738 | 7.025 | 7.025 | −172.24 | 1220.52 | 1048.28 | −0.3542 | 2.8339 | 2.4797 | −29 |
| −28 | 0.3876 | 0.7891 | 0.01738 | 6.634 | 6.634 | −171.80 | 1220.52 | 1048.72 | −0.3532 | 2.8274 | 2.4742 | −28 |
| −27 | 0.4113 | 0.8373 | 0.01738 | 6.267 | 6.267 | −171.35 | 1220.51 | 1049.16 | −0.3521 | 2.8207 | 2.4686 | −27 |
| −26 | 0.4363 | 0.8882 | 0.01738 | 5.921 | 5.921 | −170.91 | 1220.51 | 1049.60 | −0.3511 | 2.8143 | 2.4632 | −26 |
| −25 | 0.4627 | 0.9420 | 0.01739 | 5.596 | 5.596 | −170.46 | 1220.51 | 1050.05 | −0.3501 | 2.8078 | 2.4577 | −25 |
| −24 | 0.4905 | 0.9987 | 0.01739 | 5.290 | 5.290 | −170.01 | 1220.50 | 1050.49 | −0.3490 | 2.8013 | 2.4523 | −24 |
| −23 | 0.5199 | 1.059 | 0.01739 | 5.003 | 5.003 | −169.56 | 1220.49 | 1050.93 | −0.3480 | 2.7949 | 2.4469 | −23 |
| −22 | 0.5509 | 1.122 | 0.01739 | 4.732 | 4.732 | −169.12 | 1220.49 | 1051.37 | −0.3470 | 2.7885 | 2.4415 | −22 |
| −21 | 0.5836 | 1.188 | 0.01739 | 4.477 | 4.477 | −168.66 | 1220.48 | 1051.82 | −0.3460 | 2.7822 | 2.4362 | −21 |
| −20 | 0.6181 | 1.259 | 0.01739 | 4.237 | 4.237 | −168.21 | 1220.47 | 1052.26 | −0.3449 | 2.7757 | 2.4308 | −20 |
| −19 | 0.6545 | 1.333 | 0.01739 | 4.011 | 4.011 | −167.76 | 1220.46 | 1052.70 | −0.3439 | 2.7695 | 2.4256 | −19 |
| −18 | 0.6928 | 1.410 | 0.01740 | 3.797 | 3.797 | −167.31 | 1220.45 | 1053.14 | −0.3429 | 2.7632 | 2.4203 | −18 |
| −17 | 0.7332 | 1.493 | 0.01740 | 3.596 | 3.596 | −166.85 | 1220.43 | 1053.58 | −0.3418 | 2.7568 | 2.4150 | −17 |
| −16 | 0.7757 | 1.579 | 0.01740 | 3.407 | 3.407 | −166.40 | 1220.42 | 1054.02 | −0.3408 | 2.7506 | 2.4098 | −16 |
| −15 | 0.8204 | 1.670 | 0.01740 | 3.228 | 3.228 | −165.94 | 1220.41 | 1054.47 | −0.3398 | 2.7444 | 2.4046 | −15 |
| −14 | 0.8676 | 1.766 | 0.01740 | 3.060 | 3.060 | −165.48 | 1220.39 | 1054.91 | −0.3388 | 2.7383 | 2.3995 | −14 |
| −13 | 0.9172 | 1.867 | 0.01740 | 2.901 | 2.901 | −165.03 | 1220.38 | 1055.35 | −0.3377 | 2.7320 | 2.3943 | −13 |
| −12 | 0.9694 | 1.974 | 0.01740 | 2.750 | 2.750 | −164.57 | 1220.36 | 1055.79 | −0.3367 | 2.7259 | 2.3892 | −12 |
| −11 | 1.024 | 2.086 | 0.01740 | 2.609 | 2.609 | −164.11 | 1220.34 | 1056.23 | −0.3357 | 2.7198 | 2.3841 | −11 |
| −10 | 1.082 | 2.203 | 0.01741 | 2.475 | 2.475 | −163.65 | 1220.32 | 1056.67 | −0.3347 | 2.7138 | 2.3791 | −10 |
| −9 | 1.143 | 2.327 | 0.01741 | 2.349 | 2.349 | −163.18 | 1220.30 | 1057.12 | −0.3336 | 2.7076 | 2.3740 | −9 |
| −8 | 1.207 | 2.457 | 0.01741 | 2.229 | 2.229 | −162.72 | 1220.28 | 1057.56 | −0.3326 | 2.7016 | 2.3690 | −8 |
| −7 | 1.274 | 2.594 | 0.01741 | 2.116 | 2.116 | −162.26 | 1220.26 | 1058.00 | −0.3316 | 2.6956 | 2.3640 | −7 |
| −6 | 1.344 | 2.737 | 0.01741 | 2.010 | 2.010 | −161.79 | 1220.23 | 1058.44 | −0.3306 | 2.6896 | 2.3590 | −6 |
| −5 | 1.419 | 2.888 | 0.01741 | 1.909 | 1.909 | −161.33 | 1220.21 | 1058.88 | −0.3295 | 2.6836 | 2.3541 | −5 |
| −4 | 1.496 | 3.047 | 0.01742 | 1.814 | 1.814 | −160.86 | 1220.18 | 1059.32 | −0.3285 | 2.6777 | 2.3492 | −4 |
| −3 | 1.578 | 3.213 | 0.01742 | 1.723 | 1.723 | −160.39 | 1220.15 | 1059.76 | −0.3275 | 2.6718 | 2.3443 | −3 |
| −2 | 1.664 | 3.388 | 0.01742 | 1.638 | 1.638 | −159.92 | 1220.13 | 1060.21 | −0.3264 | 2.6658 | 2.3394 | −2 |
| −1 | 1.754 | 3.572 | 0.01742 | 1.557 | 1.557 | −159.45 | 1220.10 | 1060.65 | −0.3254 | 2.6600 | 2.3346 | −1 |

[a]Compiled by John A. Goff and S. Gratch.



TABLE 2. THERMODYNAMIC PROPERTIES OF WATER AT SATURATION[a] (Continued)

| FAHR. TEMP. $t$(F) | ABSOLUTE PRESSURE $p_s$ | | SPECIFIC VOLUME, CU FT PER LB | | | ENTHALPY, BTU PER LB | | | ENTROPY, BTU PER (LB) (°F) | | | FAHR. TEMP. $t$(F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lb/Sq In. | In. Hg | Sat. Solid $v_i$ | Evap. $v_{ig} \times 10^{-3}$ | Sat. Vapor $v_g \times 10^{-3}$ | Sat. Solid $h_i$ | Evap. $h_{ig}$ | Sat. Vapor $h_g$ | Sat. Solid $s_i$ | Evap. $s_{ig}$ | Sat. Vapor $s_g$ | |
| 0 | 0.01849 | 0.03764 | 0.01742 | 14.81 | 14.81 | −158.98 | 1220.07 | 1061.09 | −0.3244 | 2.6541 | 2.3297 | 0 |
| 1 | 0.01948 | 0.03966 | 0.01742 | 14.08 | 14.08 | −158.51 | 1220.04 | 1061.53 | −0.3234 | 2.6483 | 2.3249 | 1 |
| 2 | 0.02052 | 0.04178 | 0.01742 | 13.40 | 13.40 | −158.04 | 1220.01 | 1061.97 | −0.3224 | 2.6425 | 2.3201 | 2 |
| 3 | 0.02616 | 0.04400 | 0.01743 | 12.75 | 12.75 | −157.56 | 1219.97 | 1062.41 | −0.3213 | 2.6367 | 2.3154 | 3 |
| 4 | 0.02276 | 0.04633 | 0.01743 | 12.14 | 12.14 | −157.09 | 1219.94 | 1062.85 | −0.3203 | 2.6309 | 2.3106 | 4 |
| 5 | 0.02396 | 0.04878 | 0.01743 | 11.55 | 11.55 | −156.61 | 1219.90 | 1063.29 | −0.3193 | 2.6252 | 2.3059 | 5 |
| 6 | 0.02521 | 0.05134 | 0.01743 | 11.00 | 11.00 | −156.14 | 1219.88 | 1063.74 | −0.3182 | 2.6194 | 2.3012 | 6 |
| 7 | 0.02653 | 0.05402 | 0.01743 | 10.48 | 10.48 | −155.66 | 1219.84 | 1064.18 | −0.3172 | 2.6138 | 2.2966 | 7 |
| 8 | 0.02791 | 0.05683 | 0.01743 | 9.979 | 9.979 | −155.18 | 1219.80 | 1064.62 | −0.3162 | 2.6081 | 2.2919 | 8 |
| 9 | 0.02936 | 0.05977 | 0.01744 | 9.507 | 9.507 | −154.70 | 1219.76 | 1065.06 | −0.3152 | 2.6025 | 2.2873 | 9 |
| 10 | 0.03087 | 0.06286 | 0.01744 | 9.060 | 9.060 | −154.22 | 1219.72 | 1065.50 | −0.3142 | 2.5969 | 2.2827 | 10 |
| 11 | 0.03240 | 0.06608 | 0.01744 | 8.636 | 8.636 | −153.74 | 1219.68 | 1065.94 | −0.3131 | 2.5912 | 2.2781 | 11 |
| 12 | 0.03412 | 0.06946 | 0.01744 | 8.234 | 8.234 | −153.26 | 1219.64 | 1066.38 | −0.3121 | 2.5857 | 2.2736 | 12 |
| 13 | 0.03585 | 0.07300 | 0.01744 | 7.851 | 7.851 | −152.77 | 1219.59 | 1066.82 | −0.3111 | 2.5801 | 2.2690 | 13 |
| 14 | 0.03767 | 0.07669 | 0.01744 | 7.489 | 7.489 | −152.29 | 1219.55 | 1067.26 | −0.3101 | 2.5746 | 2.2645 | 14 |
| 15 | 0.03957 | 0.08056 | 0.01744 | 7.144 | 7.144 | −151.80 | 1219.50 | 1067.70 | −0.3090 | 2.5690 | 2.2600 | 15 |
| 16 | 0.04156 | 0.08461 | 0.01745 | 6.817 | 6.817 | −151.32 | 1219.46 | 1068.14 | −0.3080 | 2.5635 | 2.2555 | 16 |
| 17 | 0.04363 | 0.08884 | 0.01745 | 6.505 | 6.505 | −150.83 | 1219.41 | 1068.58 | −0.3070 | 2.5581 | 2.2511 | 17 |
| 18 | 0.04581 | 0.09326 | 0.01745 | 6.210 | 6.210 | −150.34 | 1219.36 | 1069.02 | −0.3060 | 2.5526 | 2.2466 | 18 |
| 19 | 0.04808 | 0.09789 | 0.01745 | 5.929 | 5.929 | −149.85 | 1219.31 | 1069.46 | −0.3049 | 2.5471 | 2.2422 | 19 |
| 20 | 0.05045 | 0.1027 | 0.01745 | 5.662 | 5.662 | −149.36 | 1219.26 | 1069.90 | −0.3039 | 2.5417 | 2.2378 | 20 |
| 21 | 0.05293 | 0.1078 | 0.01745 | 5.408 | 5.408 | −148.87 | 1219.21 | 1070.34 | −0.3029 | 2.5364 | 2.2335 | 21 |
| 22 | 0.05552 | 0.1130 | 0.01746 | 5.166 | 5.166 | −148.38 | 1219.16 | 1070.78 | −0.3019 | 2.5310 | 2.2291 | 22 |
| 23 | 0.05823 | 0.1186 | 0.01746 | 4.936 | 4.936 | −147.88 | 1219.10 | 1071.22 | −0.3008 | 2.5256 | 2.2248 | 23 |
| 24 | 0.06105 | 0.1243 | 0.01746 | 4.717 | 4.717 | −147.39 | 1219.05 | 1071.66 | −0.2998 | 2.5203 | 2.2205 | 24 |
| 25 | 0.06400 | 0.1303 | 0.01746 | 4.509 | 4.509 | −146.89 | 1218.98 | 1072.09 | −0.2988 | 2.5150 | 2.2162 | 25 |
| 26 | 0.06708 | 0.1366 | 0.01746 | 4.311 | 4.311 | −146.40 | 1218.93 | 1072.53 | −0.2978 | 2.5097 | 2.2119 | 26 |
| 27 | 0.07030 | 0.1431 | 0.01746 | 4.122 | 4.122 | −145.90 | 1218.87 | 1072.97 | −0.2968 | 2.5045 | 2.2077 | 27 |
| 28 | 0.07365 | 0.1500 | 0.01746 | 3.943 | 3.943 | −145.40 | 1218.81 | 1073.41 | −0.2957 | 2.4991 | 2.2034 | 28 |
| 29 | 0.07715 | 0.1571 | 0.01747 | 3.771 | 3.771 | −144.90 | 1218.75 | 1073.85 | −0.2947 | 2.4939 | 2.1992 | 29 |
| 30 | 0.08080 | 0.1645 | 0.01747 | 3.608 | 3.608 | −144.40 | 1218.69 | 1074.29 | −0.2937 | 2.4887 | 2.1950 | 30 |
| 31 | 0.08461 | 0.1723 | 0.01747 | 3.453 | 3.453 | −143.90 | 1218.63 | 1074.73 | −0.2927 | 2.4835 | 2.1908 | 31 |
| 32 | 0.08858 | 0.1803 | 0.01747 | 3.305 | 3.305 | −143.40 | 1218.56 | 1075.16 | −0.2916 | 2.4783 | 2.1867 | 32 |

[a]Compiled by John A. Goff and S. Gratch.