



Origins in 1898

Thermodynamic Properties of Saturated Butane

Placed: 03/21/2006

Replaces: 2/10/99

DRAWINGS ARE 'TYPICAL ONLY' AND NOT INTENDED FOR ENGINEERING PURPOSES

Enthalpies and Entropies are referred to saturated liquid at -200°F. where the values are zero. Refer to Fig. 1 for Enthalpies and Entropies of super heated butane vapor.

| Temp. Deg. F. <i>t</i> | Pressure Lb. Per Sq. In. | | Specific Volume Cu. Ft. per Lb. | | Density Lb. Per Cu. Ft. | | Enthalpy** Btu per Lb. | | Latent** Heat Btu per Lb. <i>L</i> | Entropy** Btu per Lb. Deg. F. | | Temp. Deg. F. <i>t</i> |
|---------------------------------|-----------------------------|----------------------|------------------------------------|-------------------|----------------------------|---------------------|--------------------------------|-------------------------------|--|----------------------------------|-------------------------------|---------------------------------|
| | Absolute <i>P</i> | Gauge <i>γ.p.</i> | Liquid <i>v</i> | Vapor <i>V</i> | Liquid <i>l/v</i> | Vapor <i>l/V</i> | Liquid <i>h_f</i> | Vapor <i>h_γ</i> | | Liquid <i>s_f</i> | Vapor <i>s_γ</i> | |
| 0 | 7.3 | *15.0 | 0.02591 | 11.1 | 38.59 | 0.0901 | 103.8 | 275.3 | 171.5 | 0.226 | 0.572 | 0 |
| 5 | 8.2 | *13.2 | 0.02603 | 9.98 | 38.41 | 0.100 | 106.2 | 276.9 | 170.7 | 0.231 | 0.572 | 5 |
| 10 | 9.2 | *11.1 | 0.02615 | 8.95 | 38.24 | 0.112 | 108.8 | 278.5 | 169.7 | 0.236 | 0.574 | 10 |
| 15 | 10.4 | * 8.8 | 0.02627 | 8.05 | 38.07 | 0.124 | 111.5 | 280.0 | 168.5 | 0.242 | 0.571 | 15 |
| 20 | 11.6 | * 6.3 | 0.02639 | 7.23 | 37.89 | 0.138 | 114.0 | 281.6 | 167.6 | 0.248 | 0.571 | 20 |
| 25 | 13.0 | * 3.6 | 0.02651 | 6.55 | 37.72 | 0.153 | 116.7 | 283.1 | 166.4 | 0.254 | 0.571 | 25 |
| 30 | 14.4 | * 0.6 | 0.02664 | 5.90 | 37.54 | 0.169 | 119.2 | 284.9 | 165.7 | 0.260 | 0.571 | 30 |
| 35 | 16.0 | 1.3 | 0.02675 | 5.37 | 37.37 | 0.183 | 121.8 | 286.4 | 164.6 | 0.264 | 0.571 | 35 |
| 40 | 17.7 | 3.0 | 0.02689 | 4.88 | 37.19 | 0.205 | 124.2 | 288.0 | 163.8 | 0.270 | 0.571 | 40 |
| 45 | 19.6 | 4.9 | 0.02703 | 4.47 | 37.00 | 0.224 | 126.8 | 289.5 | 162.7 | 0.276 | 0.571 | 45 |
| 50 | 21.6 | 6.9 | 0.02716 | 4.07 | 36.82 | 0.246 | 129.6 | 291.2 | 161.6 | 0.282 | 0.571 | 50 |
| 55 | 23.8 | 9.1 | 0.02730 | 3.73 | 36.63 | 0.267 | 132.1 | 292.7 | 160.6 | 0.287 | 0.570 | 55 |
| 60 | 26.3 | 11.6 | 0.02743 | 3.40 | 36.45 | 0.294 | 134.8 | 294.2 | 159.4 | 0.293 | 0.570 | 60 |
| 65 | 28.9 | 14.2 | 0.02759 | 3.12 | 36.24 | 0.321 | 137.3 | 295.9 | 158.6 | 0.298 | 0.570 | 65 |
| 70 | 31.6 | 16.9 | 0.02773 | 2.88 | 36.06 | 0.347 | 140.1 | 297.5 | 157.4 | 0.304 | 0.570 | 70 |
| 75 | 34.5 | 19.8 | 0.02789 | 2.65 | 35.86 | 0.377 | 142.6 | 298.9 | 156.3 | 0.310 | 0.570 | 75 |
| 80 | 37.6 | 22.9 | 0.02805 | 2.46 | 35.65 | 0.407 | 145.0 | 300.3 | 155.3 | 0.315 | 0.570 | 80 |
| 85 | 40.9 | 26.2 | 0.02821 | 2.28 | 35.45 | 0.439 | 147.8 | 302.0 | 154.2 | 0.322 | 0.570 | 85 |
| 90 | 44.5 | 29.8 | 0.02939 | 2.10 | 35.24 | 0.476 | 150.5 | 303.5 | 153.0 | 0.326 | 0.571 | 90 |
| 95 | 48.2 | 33.5 | 0.02854 | 1.96 | 35.04 | 0.510 | 153.1 | 305.0 | 151.9 | 0.332 | 0.571 | 95 |
| 100 | 52.2 | 37.5 | 0.02870 | 1.81 | 34.84 | 0.552 | 156.2 | 306.7 | 150.5 | 0.340 | 0.571 | 100 |
| 105 | 56.4 | 41.7 | 0.02889 | 1.70 | 34.62 | 0.588 | 159.1 | 308.1 | 149.0 | 0.346 | 0.572 | 105 |
| 110 | 60.8 | 46.1 | 0.02903 | 1.58 | 34.41 | 0.633 | 161.9 | 309.5 | 147.6 | 0.352 | 0.572 | 110 |
| 115 | 65.6 | 50.9 | 0.02925 | 1.48 | 34.19 | 0.676 | 165.0 | 311.1 | 146.1 | 0.359 | 0.572 | 115 |
| 120 | 70.8 | 56.1 | 0.02945 | 1.37 | 33.96 | 0.730 | 167.8 | 312.7 | 144.9 | 0.365 | 0.572 | 120 |
| 125 | 76.0 | 61.3 | 0.02962 | 1.28 | 33.77 | 0.783 | 171.0 | 314.0 | 143.0 | 0.372 | 0.573 | 125 |
| 130 | 81.4 | 66.7 | 0.02980 | 1.19 | 33.56 | 0.840 | 174.0 | 315.5 | 141.5 | 0.378 | 0.573 | 130 |
| 135 | 87.0 | 72.3 | 0.03000 | 1.11 | 33.34 | 0.900 | 177.1 | 317.0 | 139.9 | 0.385 | 0.573 | 135 |
| 140 | 92.6 | 77.9 | 0.03020 | 1.04 | 33.14 | 0.965 | 179.9 | 318.2 | 138.3 | 0.392 | 0.574 | 140 |
| 145 | 100.0 | 85.3 | 0.03040 | 0.966 | 32.92 | 1.035 | 183.1 | 319.5 | 136.4 | 0.398 | 0.574 | 145 |
| 150 | 108.0 | 93.1 | 0.03060 | 0.897 | 32.70 | 1.115 | 186.5 | 321.0 | 134.5 | 0.405 | 0.574 | 150 |
| 155 | 115.0 | 100.3 | 0.03084 | 0.840 | 32.43 | 1.190 | 189.3 | 322.3 | 133.0 | 0.411 | 0.574 | 155 |
| 160 | 122.0 | 107.3 | 0.03112 | 0.785 | 32.15 | 1.275 | 192.7 | 323.8 | 131.1 | 0.418 | 0.575 | 160 |
| 165 | 130.0 | 115.3 | 0.03140 | 0.733 | 31.90 | 1.365 | 195.8 | 325.0 | 129.2 | 0.425 | 0.575 | 165 |
| 170 | 140.0 | 125.3 | 0.03165 | 0.687 | 31.62 | 1.455 | 199.2 | 326.1 | 126.9 | 0.433 | 0.575 | 170 |
| 175 | 150.0 | 135.3 | 0.03193 | 0.643 | 31.36 | 1.557 | 202.1 | 327.2 | 125.1 | 0.439 | 0.575 | 175 |
| 180 | 160.0 | 145.3 | 0.03218 | 0.602 | 31.10 | 1.660 | 205.0 | 328.4 | 123.4 | 0.445 | 0.575 | 180 |

† Based on material from Dana, Jenkins, Burdick and Timm, published originally in REFRIGERATING ENGINEERING, June, 1926, Vol. 12, No. 12, Page 403.

* Inches of mercury below one standard atmosphere (29.92 in.).

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