



TABLE 21 Type C Thermocouple— thermoelectric voltage as a function of temperature (°C); reference junctions at 0 °C

| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|--------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| Thermoelectric Voltage in Millivolts | | | | | | | | | | | | |
| 0 | 0.000 | 0.013 | 0.027 | 0.040 | 0.054 | 0.067 | 0.081 | 0.094 | 0.108 | 0.121 | 0.135 | 0 |
| 10 | 0.135 | 0.149 | 0.162 | 0.176 | 0.190 | 0.204 | 0.217 | 0.231 | 0.245 | 0.259 | 0.273 | 10 |
| 20 | 0.273 | 0.286 | 0.300 | 0.314 | 0.328 | 0.342 | 0.356 | 0.370 | 0.384 | 0.398 | 0.412 | 20 |
| 30 | 0.412 | 0.426 | 0.441 | 0.455 | 0.469 | 0.483 | 0.497 | 0.512 | 0.526 | 0.540 | 0.554 | 30 |
| 40 | 0.554 | 0.569 | 0.583 | 0.598 | 0.612 | 0.626 | 0.641 | 0.655 | 0.670 | 0.684 | 0.699 | 40 |
| 50 | 0.699 | 0.713 | 0.728 | 0.742 | 0.757 | 0.772 | 0.786 | 0.801 | 0.816 | 0.830 | 0.845 | 50 |
| 60 | 0.845 | 0.860 | 0.875 | 0.889 | 0.904 | 0.919 | 0.934 | 0.949 | 0.964 | 0.979 | 0.994 | 60 |
| 70 | 0.994 | 1.009 | 1.024 | 1.039 | 1.054 | 1.069 | 1.084 | 1.099 | 1.114 | 1.129 | 1.144 | 70 |
| 80 | 1.144 | 1.159 | 1.175 | 1.190 | 1.205 | 1.220 | 1.235 | 1.251 | 1.266 | 1.281 | 1.297 | 80 |
| 90 | 1.297 | 1.312 | 1.327 | 1.343 | 1.358 | 1.374 | 1.389 | 1.405 | 1.420 | 1.436 | 1.451 | 90 |
| 100 | 1.451 | 1.467 | 1.482 | 1.498 | 1.513 | 1.529 | 1.545 | 1.560 | 1.576 | 1.592 | 1.607 | 100 |
| 110 | 1.607 | 1.623 | 1.639 | 1.655 | 1.670 | 1.686 | 1.702 | 1.718 | 1.734 | 1.750 | 1.766 | 110 |
| 120 | 1.766 | 1.781 | 1.797 | 1.813 | 1.829 | 1.845 | 1.861 | 1.877 | 1.893 | 1.909 | 1.925 | 120 |
| 130 | 1.925 | 1.942 | 1.958 | 1.974 | 1.990 | 2.006 | 2.022 | 2.038 | 2.055 | 2.071 | 2.087 | 130 |
| 140 | 2.087 | 2.103 | 2.120 | 2.136 | 2.152 | 2.168 | 2.185 | 2.201 | 2.217 | 2.234 | 2.250 | 140 |
| 150 | 2.250 | 2.267 | 2.283 | 2.300 | 2.316 | 2.332 | 2.349 | 2.365 | 2.382 | 2.398 | 2.415 | 150 |
| 160 | 2.415 | 2.432 | 2.448 | 2.465 | 2.481 | 2.498 | 2.515 | 2.531 | 2.548 | 2.565 | 2.581 | 160 |
| 170 | 2.581 | 2.598 | 2.615 | 2.632 | 2.648 | 2.665 | 2.682 | 2.699 | 2.716 | 2.732 | 2.749 | 170 |
| 180 | 2.749 | 2.766 | 2.783 | 2.800 | 2.817 | 2.834 | 2.851 | 2.868 | 2.885 | 2.902 | 2.919 | 180 |
| 190 | 2.919 | 2.936 | 2.953 | 2.970 | 2.987 | 3.004 | 3.021 | 3.038 | 3.055 | 3.072 | 3.089 | 190 |
| 200 | 3.089 | 3.106 | 3.124 | 3.141 | 3.158 | 3.175 | 3.192 | 3.210 | 3.227 | 3.244 | 3.261 | 200 |
| 210 | 3.261 | 3.279 | 3.296 | 3.313 | 3.331 | 3.348 | 3.365 | 3.383 | 3.400 | 3.417 | 3.435 | 210 |
| 220 | 3.435 | 3.452 | 3.470 | 3.487 | 3.505 | 3.522 | 3.539 | 3.557 | 3.574 | 3.592 | 3.609 | 220 |
| 230 | 3.609 | 3.627 | 3.645 | 3.662 | 3.680 | 3.697 | 3.715 | 3.732 | 3.750 | 3.768 | 3.785 | 230 |
| 240 | 3.785 | 3.803 | 3.821 | 3.838 | 3.856 | 3.874 | 3.891 | 3.909 | 3.927 | 3.945 | 3.962 | 240 |
| 250 | 3.962 | 3.980 | 3.998 | 4.016 | 4.034 | 4.051 | 4.069 | 4.087 | 4.105 | 4.123 | 4.141 | 250 |
| 260 | 4.141 | 4.158 | 4.176 | 4.194 | 4.212 | 4.230 | 4.248 | 4.266 | 4.284 | 4.302 | 4.320 | 260 |
| 270 | 4.320 | 4.338 | 4.356 | 4.374 | 4.392 | 4.410 | 4.428 | 4.446 | 4.464 | 4.482 | 4.500 | 270 |
| 280 | 4.500 | 4.518 | 4.536 | 4.554 | 4.573 | 4.591 | 4.609 | 4.627 | 4.645 | 4.663 | 4.682 | 280 |
| 290 | 4.682 | 4.700 | 4.718 | 4.736 | 4.754 | 4.773 | 4.791 | 4.809 | 4.827 | 4.846 | 4.864 | 290 |
| 300 | 4.864 | 4.882 | 4.900 | 4.919 | 4.937 | 4.955 | 4.974 | 4.992 | 5.010 | 5.029 | 5.047 | 300 |
| 310 | 5.047 | 5.065 | 5.084 | 5.102 | 5.121 | 5.139 | 5.157 | 5.176 | 5.194 | 5.213 | 5.231 | 310 |
| 320 | 5.231 | 5.250 | 5.268 | 5.287 | 5.305 | 5.323 | 5.342 | 5.361 | 5.379 | 5.398 | 5.416 | 320 |
| 330 | 5.416 | 5.435 | 5.453 | 5.472 | 5.490 | 5.509 | 5.527 | 5.546 | 5.565 | 5.583 | 5.602 | 330 |
| 340 | 5.602 | 5.620 | 5.639 | 5.658 | 5.676 | 5.695 | 5.714 | 5.732 | 5.751 | 5.770 | 5.788 | 340 |
| 350 | 5.788 | 5.807 | 5.826 | 5.844 | 5.863 | 5.882 | 5.901 | 5.919 | 5.938 | 5.957 | 5.976 | 350 |
| 360 | 5.976 | 5.994 | 6.013 | 6.032 | 6.051 | 6.070 | 6.088 | 6.107 | 6.126 | 6.145 | 6.164 | 360 |
| 370 | 6.164 | 6.182 | 6.201 | 6.220 | 6.239 | 6.258 | 6.277 | 6.296 | 6.314 | 6.333 | 6.352 | 370 |
| 380 | 6.352 | 6.371 | 6.390 | 6.409 | 6.428 | 6.447 | 6.466 | 6.485 | 6.504 | 6.523 | 6.541 | 380 |
| 390 | 6.541 | 6.560 | 6.579 | 6.598 | 6.617 | 6.636 | 6.655 | 6.674 | 6.693 | 6.712 | 6.731 | 390 |
| 400 | 6.731 | 6.750 | 6.769 | 6.788 | 6.807 | 6.826 | 6.845 | 6.865 | 6.884 | 6.903 | 6.922 | 400 |
| 410 | 6.922 | 6.941 | 6.960 | 6.979 | 6.998 | 7.017 | 7.036 | 7.055 | 7.074 | 7.094 | 7.113 | 410 |
| 420 | 7.113 | 7.132 | 7.151 | 7.170 | 7.189 | 7.208 | 7.227 | 7.247 | 7.266 | 7.285 | 7.304 | 420 |
| 430 | 7.304 | 7.323 | 7.342 | 7.362 | 7.381 | 7.400 | 7.419 | 7.438 | 7.458 | 7.477 | 7.496 | 430 |
| 440 | 7.496 | 7.515 | 7.534 | 7.554 | 7.573 | 7.592 | 7.611 | 7.631 | 7.650 | 7.669 | 7.688 | 440 |
| 450 | 7.688 | 7.708 | 7.727 | 7.746 | 7.765 | 7.785 | 7.804 | 7.823 | 7.842 | 7.862 | 7.881 | 450 |
| 460 | 7.881 | 7.900 | 7.920 | 7.939 | 7.958 | 7.978 | 7.997 | 8.016 | 8.036 | 8.055 | 8.074 | 460 |
| 470 | 8.074 | 8.094 | 8.113 | 8.132 | 8.152 | 8.171 | 8.190 | 8.210 | 8.229 | 8.248 | 8.268 | 470 |
| 480 | 8.268 | 8.287 | 8.306 | 8.326 | 8.345 | 8.364 | 8.384 | 8.403 | 8.423 | 8.442 | 8.461 | 480 |
| 490 | 8.461 | 8.481 | 8.500 | 8.520 | 8.539 | 8.558 | 8.578 | 8.597 | 8.617 | 8.636 | 8.655 | 490 |
| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |

TABLE 21 Type C Thermocouple— thermoelectric voltage as a function of temperature (°C); reference junctions at 0 °C



| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| Thermoelectric Voltage in Millivolts | | | | | | | | | | | | |
| 500 | 8.655 | 8.675 | 8.694 | 8.714 | 8.733 | 8.753 | 8.772 | 8.791 | 8.811 | 8.830 | 8.850 | 500 |
| 510 | 8.850 | 8.869 | 8.889 | 8.908 | 8.928 | 8.947 | 8.966 | 8.986 | 9.005 | 9.025 | 9.044 | 510 |
| 520 | 9.044 | 9.064 | 9.083 | 9.103 | 9.122 | 9.142 | 9.161 | 9.181 | 9.200 | 9.220 | 9.239 | 520 |
| 530 | 9.239 | 9.259 | 9.278 | 9.298 | 9.317 | 9.337 | 9.356 | 9.376 | 9.395 | 9.415 | 9.434 | 530 |
| 540 | 9.434 | 9.454 | 9.473 | 9.493 | 9.512 | 9.532 | 9.551 | 9.571 | 9.590 | 9.610 | 9.629 | 540 |
| 550 | 9.629 | 9.649 | 9.668 | 9.688 | 9.707 | 9.727 | 9.746 | 9.766 | 9.785 | 9.805 | 9.824 | 550 |
| 560 | 9.824 | 9.844 | 9.863 | 9.883 | 9.902 | 9.922 | 9.942 | 9.961 | 9.981 | 10.000 | 10.020 | 560 |
| 570 | 10.020 | 10.039 | 10.059 | 10.078 | 10.098 | 10.117 | 10.137 | 10.156 | 10.176 | 10.196 | 10.215 | 570 |
| 580 | 10.215 | 10.235 | 10.254 | 10.274 | 10.293 | 10.313 | 10.332 | 10.352 | 10.371 | 10.391 | 10.411 | 580 |
| 590 | 10.411 | 10.430 | 10.450 | 10.469 | 10.489 | 10.508 | 10.528 | 10.547 | 10.567 | 10.587 | 10.606 | 590 |
| 600 | 10.606 | 10.626 | 10.645 | 10.665 | 10.684 | 10.704 | 10.723 | 10.743 | 10.763 | 10.782 | 10.802 | 600 |
| 610 | 10.802 | 10.821 | 10.841 | 10.860 | 10.880 | 10.899 | 10.919 | 10.939 | 10.958 | 10.978 | 10.997 | 610 |
| 620 | 10.997 | 11.017 | 11.036 | 11.056 | 11.075 | 11.095 | 11.114 | 11.134 | 11.154 | 11.173 | 11.193 | 620 |
| 630 | 11.193 | 11.212 | 11.232 | 11.251 | 11.271 | 11.290 | 11.310 | 11.330 | 11.349 | 11.369 | 11.388 | 630 |
| 640 | 11.388 | 11.408 | 11.427 | 11.447 | 11.466 | 11.486 | 11.505 | 11.525 | 11.544 | 11.564 | 11.584 | 640 |
| 650 | 11.584 | 11.603 | 11.623 | 11.642 | 11.662 | 11.681 | 11.701 | 11.720 | 11.740 | 11.759 | 11.779 | 650 |
| 660 | 11.779 | 11.798 | 11.818 | 11.837 | 11.857 | 11.876 | 11.896 | 11.915 | 11.935 | 11.955 | 11.974 | 660 |
| 670 | 11.974 | 11.994 | 12.013 | 12.033 | 12.052 | 12.072 | 12.091 | 12.111 | 12.130 | 12.150 | 12.169 | 670 |
| 680 | 12.169 | 12.189 | 12.208 | 12.228 | 12.247 | 12.267 | 12.286 | 12.306 | 12.325 | 12.345 | 12.364 | 680 |
| 690 | 12.364 | 12.384 | 12.403 | 12.422 | 12.442 | 12.461 | 12.481 | 12.500 | 12.520 | 12.539 | 12.559 | 690 |
| 700 | 12.559 | 12.578 | 12.598 | 12.617 | 12.637 | 12.656 | 12.676 | 12.695 | 12.715 | 12.734 | 12.753 | 700 |
| 710 | 12.753 | 12.773 | 12.792 | 12.812 | 12.831 | 12.851 | 12.870 | 12.890 | 12.909 | 12.928 | 12.948 | 710 |
| 720 | 12.948 | 12.967 | 12.987 | 13.006 | 13.026 | 13.045 | 13.064 | 13.084 | 13.103 | 13.123 | 13.142 | 720 |
| 730 | 13.142 | 13.161 | 13.181 | 13.200 | 13.220 | 13.239 | 13.258 | 13.278 | 13.297 | 13.317 | 13.336 | 730 |
| 740 | 13.336 | 13.355 | 13.375 | 13.394 | 13.413 | 13.433 | 13.452 | 13.472 | 13.491 | 13.510 | 13.530 | 740 |
| 750 | 13.530 | 13.549 | 13.568 | 13.588 | 13.607 | 13.626 | 13.646 | 13.665 | 13.685 | 13.704 | 13.723 | 750 |
| 760 | 13.723 | 13.743 | 13.762 | 13.781 | 13.800 | 13.820 | 13.839 | 13.858 | 13.878 | 13.897 | 13.916 | 760 |
| 770 | 13.916 | 13.936 | 13.955 | 13.974 | 13.994 | 14.013 | 14.032 | 14.051 | 14.071 | 14.090 | 14.109 | 770 |
| 780 | 14.109 | 14.129 | 14.148 | 14.167 | 14.186 | 14.206 | 14.225 | 14.244 | 14.263 | 14.283 | 14.302 | 780 |
| 790 | 14.302 | 14.321 | 14.340 | 14.360 | 14.379 | 14.398 | 14.417 | 14.437 | 14.456 | 14.475 | 14.494 | 790 |
| 800 | 14.494 | 14.513 | 14.533 | 14.552 | 14.571 | 14.590 | 14.609 | 14.629 | 14.648 | 14.667 | 14.686 | 800 |
| 810 | 14.686 | 14.705 | 14.725 | 14.744 | 14.763 | 14.782 | 14.801 | 14.820 | 14.840 | 14.859 | 14.878 | 810 |
| 820 | 14.878 | 14.897 | 14.916 | 14.935 | 14.954 | 14.974 | 14.993 | 15.012 | 15.031 | 15.050 | 15.069 | 820 |
| 830 | 15.069 | 15.088 | 15.107 | 15.126 | 15.146 | 15.165 | 15.184 | 15.203 | 15.222 | 15.241 | 15.260 | 830 |
| 840 | 15.260 | 15.279 | 15.298 | 15.317 | 15.336 | 15.355 | 15.374 | 15.393 | 15.413 | 15.432 | 15.451 | 840 |
| 850 | 15.451 | 15.470 | 15.489 | 15.508 | 15.527 | 15.546 | 15.565 | 15.584 | 15.603 | 15.622 | 15.641 | 850 |
| 860 | 15.641 | 15.660 | 15.679 | 15.698 | 15.717 | 15.736 | 15.755 | 15.774 | 15.793 | 15.812 | 15.831 | 860 |
| 870 | 15.831 | 15.849 | 15.868 | 15.887 | 15.906 | 15.925 | 15.944 | 15.963 | 15.982 | 16.001 | 16.020 | 870 |
| 880 | 16.020 | 16.039 | 16.058 | 16.077 | 16.096 | 16.114 | 16.133 | 16.152 | 16.171 | 16.190 | 16.209 | 880 |
| 890 | 16.209 | 16.228 | 16.247 | 16.265 | 16.284 | 16.303 | 16.322 | 16.341 | 16.360 | 16.379 | 16.397 | 890 |
| 900 | 16.397 | 16.416 | 16.435 | 16.454 | 16.473 | 16.491 | 16.510 | 16.529 | 16.548 | 16.567 | 16.585 | 900 |
| 910 | 16.585 | 16.604 | 16.623 | 16.642 | 16.661 | 16.679 | 16.698 | 16.717 | 16.736 | 16.754 | 16.773 | 910 |
| 920 | 16.773 | 16.792 | 16.811 | 16.829 | 16.848 | 16.867 | 16.886 | 16.904 | 16.923 | 16.942 | 16.960 | 920 |
| 930 | 16.960 | 16.979 | 16.998 | 17.016 | 17.035 | 17.054 | 17.072 | 17.091 | 17.110 | 17.128 | 17.147 | 930 |
| 940 | 17.147 | 17.166 | 17.184 | 17.203 | 17.222 | 17.240 | 17.259 | 17.278 | 17.296 | 17.315 | 17.333 | 940 |
| 950 | 17.333 | 17.352 | 17.371 | 17.389 | 17.408 | 17.426 | 17.445 | 17.463 | 17.482 | 17.501 | 17.519 | 950 |
| 960 | 17.519 | 17.538 | 17.556 | 17.575 | 17.593 | 17.612 | 17.630 | 17.649 | 17.667 | 17.686 | 17.704 | 960 |
| 970 | 17.704 | 17.723 | 17.741 | 17.760 | 17.778 | 17.797 | 17.815 | 17.834 | 17.852 | 17.871 | 17.889 | 970 |
| 980 | 17.889 | 17.908 | 17.926 | 17.945 | 17.963 | 17.981 | 18.000 | 18.018 | 18.037 | 18.055 | 18.074 | 980 |
| 990 | 18.074 | 18.092 | 18.110 | 18.129 | 18.147 | 18.166 | 18.184 | 18.202 | 18.221 | 18.239 | 18.257 | 990 |
| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |



TABLE 21 Type C Thermocouple— thermoelectric voltage as a function of temperature (°C); reference junctions at 0 °C

| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Thermoelectric Voltage in Millivolts | | | | | | | | | | | | |
| 1000 | 18.257 | 18.276 | 18.294 | 18.312 | 18.331 | 18.349 | 18.367 | 18.386 | 18.404 | 18.422 | 18.441 | 1000 |
| 1010 | 18.441 | 18.459 | 18.477 | 18.496 | 18.514 | 18.532 | 18.550 | 18.569 | 18.587 | 18.605 | 18.623 | 1010 |
| 1020 | 18.623 | 18.642 | 18.660 | 18.678 | 18.696 | 18.715 | 18.733 | 18.751 | 18.769 | 18.788 | 18.806 | 1020 |
| 1030 | 18.806 | 18.824 | 18.842 | 18.860 | 18.878 | 18.897 | 18.915 | 18.933 | 18.951 | 18.969 | 18.987 | 1030 |
| 1040 | 18.987 | 19.006 | 19.024 | 19.042 | 19.060 | 19.078 | 19.096 | 19.114 | 19.132 | 19.151 | 19.169 | 1040 |
| 1050 | 19.169 | 19.187 | 19.205 | 19.223 | 19.241 | 19.259 | 19.277 | 19.295 | 19.313 | 19.331 | 19.349 | 1050 |
| 1060 | 19.349 | 19.367 | 19.385 | 19.403 | 19.421 | 19.439 | 19.457 | 19.475 | 19.493 | 19.511 | 19.529 | 1060 |
| 1070 | 19.529 | 19.547 | 19.565 | 19.583 | 19.601 | 19.619 | 19.637 | 19.655 | 19.673 | 19.691 | 19.709 | 1070 |
| 1080 | 19.709 | 19.727 | 19.745 | 19.763 | 19.781 | 19.799 | 19.816 | 19.834 | 19.852 | 19.870 | 19.888 | 1080 |
| 1090 | 19.888 | 19.906 | 19.924 | 19.942 | 19.959 | 19.977 | 19.995 | 20.013 | 20.031 | 20.049 | 20.066 | 1090 |
| 1100 | 20.066 | 20.084 | 20.102 | 20.120 | 20.138 | 20.155 | 20.173 | 20.191 | 20.209 | 20.227 | 20.244 | 1100 |
| 1110 | 20.244 | 20.262 | 20.280 | 20.298 | 20.315 | 20.333 | 20.351 | 20.369 | 20.386 | 20.404 | 20.422 | 1110 |
| 1120 | 20.422 | 20.439 | 20.457 | 20.475 | 20.492 | 20.510 | 20.528 | 20.546 | 20.563 | 20.581 | 20.598 | 1120 |
| 1130 | 20.598 | 20.616 | 20.634 | 20.651 | 20.669 | 20.687 | 20.704 | 20.722 | 20.739 | 20.757 | 20.775 | 1130 |
| 1140 | 20.775 | 20.792 | 20.810 | 20.827 | 20.845 | 20.863 | 20.880 | 20.898 | 20.915 | 20.933 | 20.950 | 1140 |
| 1150 | 20.950 | 20.968 | 20.985 | 21.003 | 21.020 | 21.038 | 21.055 | 21.073 | 21.090 | 21.108 | 21.125 | 1150 |
| 1160 | 21.125 | 21.143 | 21.160 | 21.178 | 21.195 | 21.213 | 21.230 | 21.248 | 21.265 | 21.282 | 21.300 | 1160 |
| 1170 | 21.300 | 21.317 | 21.335 | 21.352 | 21.369 | 21.387 | 21.404 | 21.422 | 21.439 | 21.456 | 21.474 | 1170 |
| 1180 | 21.474 | 21.491 | 21.508 | 21.526 | 21.543 | 21.560 | 21.578 | 21.595 | 21.612 | 21.630 | 21.647 | 1180 |
| 1190 | 21.647 | 21.664 | 21.682 | 21.699 | 21.716 | 21.733 | 21.751 | 21.768 | 21.785 | 21.802 | 21.820 | 1190 |
| 1200 | 21.820 | 21.837 | 21.854 | 21.871 | 21.889 | 21.906 | 21.923 | 21.940 | 21.957 | 21.975 | 21.992 | 1200 |
| 1210 | 21.992 | 22.009 | 22.026 | 22.043 | 22.061 | 22.078 | 22.095 | 22.112 | 22.129 | 22.146 | 22.163 | 1210 |
| 1220 | 22.163 | 22.180 | 22.198 | 22.215 | 22.232 | 22.249 | 22.266 | 22.283 | 22.300 | 22.317 | 22.334 | 1220 |
| 1230 | 22.334 | 22.351 | 22.368 | 22.385 | 22.403 | 22.420 | 22.437 | 22.454 | 22.471 | 22.488 | 22.505 | 1230 |
| 1240 | 22.505 | 22.522 | 22.539 | 22.556 | 22.573 | 22.590 | 22.607 | 22.624 | 22.641 | 22.657 | 22.674 | 1240 |
| 1250 | 22.674 | 22.691 | 22.708 | 22.725 | 22.742 | 22.759 | 22.776 | 22.793 | 22.810 | 22.827 | 22.844 | 1250 |
| 1260 | 22.844 | 22.860 | 22.877 | 22.894 | 22.911 | 22.928 | 22.945 | 22.962 | 22.978 | 22.995 | 23.012 | 1260 |
| 1270 | 23.012 | 23.029 | 23.046 | 23.063 | 23.079 | 23.096 | 23.113 | 23.130 | 23.147 | 23.163 | 23.180 | 1270 |
| 1280 | 23.180 | 23.197 | 23.214 | 23.230 | 23.247 | 23.264 | 23.281 | 23.297 | 23.314 | 23.331 | 23.347 | 1280 |
| 1290 | 23.347 | 23.364 | 23.381 | 23.398 | 23.414 | 23.431 | 23.448 | 23.464 | 23.481 | 23.498 | 23.514 | 1290 |
| 1300 | 23.514 | 23.531 | 23.548 | 23.564 | 23.581 | 23.597 | 23.614 | 23.631 | 23.647 | 23.664 | 23.680 | 1300 |
| 1310 | 23.680 | 23.697 | 23.714 | 23.730 | 23.747 | 23.763 | 23.780 | 23.796 | 23.813 | 23.829 | 23.846 | 1310 |
| 1320 | 23.846 | 23.862 | 23.879 | 23.895 | 23.912 | 23.928 | 23.945 | 23.961 | 23.978 | 23.994 | 24.011 | 1320 |
| 1330 | 24.011 | 24.027 | 24.044 | 24.060 | 24.077 | 24.093 | 24.110 | 24.126 | 24.142 | 24.159 | 24.175 | 1330 |
| 1340 | 24.175 | 24.192 | 24.208 | 24.224 | 24.241 | 24.257 | 24.274 | 24.290 | 24.306 | 24.323 | 24.339 | 1340 |
| 1350 | 24.339 | 24.355 | 24.372 | 24.388 | 24.404 | 24.421 | 24.437 | 24.453 | 24.470 | 24.486 | 24.502 | 1350 |
| 1360 | 24.502 | 24.518 | 24.535 | 24.551 | 24.567 | 24.583 | 24.600 | 24.616 | 24.632 | 24.648 | 24.665 | 1360 |
| 1370 | 24.665 | 24.681 | 24.697 | 24.713 | 24.730 | 24.746 | 24.762 | 24.778 | 24.794 | 24.810 | 24.827 | 1370 |
| 1380 | 24.827 | 24.843 | 24.859 | 24.875 | 24.891 | 24.907 | 24.923 | 24.940 | 24.956 | 24.972 | 24.988 | 1380 |
| 1390 | 24.988 | 25.004 | 25.020 | 25.036 | 25.052 | 25.068 | 25.084 | 25.100 | 25.117 | 25.133 | 25.149 | 1390 |
| 1400 | 25.149 | 25.165 | 25.181 | 25.197 | 25.213 | 25.229 | 25.245 | 25.261 | 25.277 | 25.293 | 25.309 | 1400 |
| 1410 | 25.309 | 25.325 | 25.341 | 25.357 | 25.373 | 25.389 | 25.405 | 25.420 | 25.436 | 25.452 | 25.468 | 1410 |
| 1420 | 25.468 | 25.484 | 25.500 | 25.516 | 25.532 | 25.548 | 25.564 | 25.580 | 25.595 | 25.611 | 25.627 | 1420 |
| 1430 | 25.627 | 25.643 | 25.659 | 25.675 | 25.691 | 25.706 | 25.722 | 25.738 | 25.754 | 25.770 | 25.785 | 1430 |
| 1440 | 25.785 | 25.801 | 25.817 | 25.833 | 25.849 | 25.864 | 25.880 | 25.896 | 25.912 | 25.927 | 25.943 | 1440 |
| 1450 | 25.943 | 25.959 | 25.975 | 25.990 | 26.006 | 26.022 | 26.038 | 26.053 | 26.069 | 26.085 | 26.100 | 1450 |
| 1460 | 26.100 | 26.116 | 26.132 | 26.147 | 26.163 | 26.179 | 26.194 | 26.210 | 26.226 | 26.241 | 26.257 | 1460 |
| 1470 | 26.257 | 26.272 | 26.288 | 26.304 | 26.319 | 26.335 | 26.350 | 26.366 | 26.382 | 26.397 | 26.413 | 1470 |
| 1480 | 26.413 | 26.428 | 26.444 | 26.459 | 26.475 | 26.490 | 26.506 | 26.521 | 26.537 | 26.552 | 26.568 | 1480 |
| 1490 | 26.568 | 26.583 | 26.599 | 26.614 | 26.630 | 26.645 | 26.661 | 26.676 | 26.692 | 26.707 | 26.723 | 1490 |
| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |

TABLE 21 Type C Thermocouple— thermoelectric voltage as a function of temperature (°C); reference junctions at 0 °C



| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Thermoelectric Voltage in Millivolts | | | | | | | | | | | | |
| 1500 | 26.723 | 26.738 | 26.753 | 26.769 | 26.784 | 26.800 | 26.815 | 26.830 | 26.846 | 26.861 | 26.877 | 1500 |
| 1510 | 26.877 | 26.892 | 26.907 | 26.923 | 26.938 | 26.953 | 26.969 | 26.984 | 26.999 | 27.015 | 27.030 | 1510 |
| 1520 | 27.030 | 27.045 | 27.061 | 27.076 | 27.091 | 27.107 | 27.122 | 27.137 | 27.152 | 27.168 | 27.183 | 1520 |
| 1530 | 27.183 | 27.198 | 27.213 | 27.229 | 27.244 | 27.259 | 27.274 | 27.290 | 27.305 | 27.320 | 27.335 | 1530 |
| 1540 | 27.335 | 27.350 | 27.366 | 27.381 | 27.396 | 27.411 | 27.426 | 27.441 | 27.457 | 27.472 | 27.487 | 1540 |
| 1550 | 27.487 | 27.502 | 27.517 | 27.532 | 27.547 | 27.562 | 27.578 | 27.593 | 27.608 | 27.623 | 27.638 | 1550 |
| 1560 | 27.638 | 27.653 | 27.668 | 27.683 | 27.698 | 27.713 | 27.728 | 27.743 | 27.758 | 27.773 | 27.788 | 1560 |
| 1570 | 27.788 | 27.803 | 27.818 | 27.833 | 27.848 | 27.863 | 27.878 | 27.893 | 27.908 | 27.923 | 27.938 | 1570 |
| 1580 | 27.938 | 27.953 | 27.968 | 27.983 | 27.998 | 28.013 | 28.028 | 28.043 | 28.058 | 28.072 | 28.087 | 1580 |
| 1590 | 28.087 | 28.102 | 28.117 | 28.132 | 28.147 | 28.162 | 28.177 | 28.191 | 28.206 | 28.221 | 28.236 | 1590 |
| 1600 | 28.236 | 28.251 | 28.266 | 28.280 | 28.295 | 28.310 | 28.325 | 28.340 | 28.354 | 28.369 | 28.384 | 1600 |
| 1610 | 28.384 | 28.399 | 28.413 | 28.428 | 28.443 | 28.458 | 28.472 | 28.487 | 28.502 | 28.517 | 28.531 | 1610 |
| 1620 | 28.531 | 28.546 | 28.561 | 28.575 | 28.590 | 28.605 | 28.619 | 28.634 | 28.649 | 28.663 | 28.678 | 1620 |
| 1630 | 28.678 | 28.693 | 28.707 | 28.722 | 28.737 | 28.751 | 28.766 | 28.780 | 28.795 | 28.810 | 28.824 | 1630 |
| 1640 | 28.824 | 28.839 | 28.853 | 28.868 | 28.883 | 28.897 | 28.912 | 28.926 | 28.941 | 28.955 | 28.970 | 1640 |
| 1650 | 28.970 | 28.984 | 28.999 | 29.013 | 29.028 | 29.042 | 29.057 | 29.071 | 29.086 | 29.100 | 29.115 | 1650 |
| 1660 | 29.115 | 29.129 | 29.144 | 29.158 | 29.173 | 29.187 | 29.201 | 29.216 | 29.230 | 29.245 | 29.259 | 1660 |
| 1670 | 29.259 | 29.274 | 29.288 | 29.302 | 29.317 | 29.331 | 29.345 | 29.360 | 29.374 | 29.388 | 29.403 | 1670 |
| 1680 | 29.403 | 29.417 | 29.431 | 29.446 | 29.460 | 29.474 | 29.489 | 29.503 | 29.517 | 29.532 | 29.546 | 1680 |
| 1690 | 29.546 | 29.560 | 29.574 | 29.589 | 29.603 | 29.617 | 29.631 | 29.646 | 29.660 | 29.674 | 29.688 | 1690 |
| 1700 | 29.688 | 29.703 | 29.717 | 29.731 | 29.745 | 29.759 | 29.774 | 29.788 | 29.802 | 29.816 | 29.830 | 1700 |
| 1710 | 29.830 | 29.844 | 29.859 | 29.873 | 29.887 | 29.901 | 29.915 | 29.929 | 29.943 | 29.957 | 29.971 | 1710 |
| 1720 | 29.971 | 29.986 | 30.000 | 30.014 | 30.028 | 30.042 | 30.056 | 30.070 | 30.084 | 30.098 | 30.112 | 1720 |
| 1730 | 30.112 | 30.126 | 30.140 | 30.154 | 30.168 | 30.182 | 30.196 | 30.210 | 30.224 | 30.238 | 30.252 | 1730 |
| 1740 | 30.252 | 30.266 | 30.280 | 30.294 | 30.308 | 30.322 | 30.336 | 30.350 | 30.364 | 30.378 | 30.391 | 1740 |
| 1750 | 30.391 | 30.405 | 30.419 | 30.433 | 30.447 | 30.461 | 30.475 | 30.489 | 30.502 | 30.516 | 30.530 | 1750 |
| 1760 | 30.530 | 30.544 | 30.558 | 30.572 | 30.585 | 30.599 | 30.613 | 30.627 | 30.641 | 30.654 | 30.668 | 1760 |
| 1770 | 30.668 | 30.682 | 30.696 | 30.710 | 30.723 | 30.737 | 30.751 | 30.765 | 30.778 | 30.792 | 30.806 | 1770 |
| 1780 | 30.806 | 30.819 | 30.833 | 30.847 | 30.861 | 30.874 | 30.888 | 30.902 | 30.915 | 30.929 | 30.943 | 1780 |
| 1790 | 30.943 | 30.956 | 30.970 | 30.983 | 30.997 | 31.011 | 31.024 | 31.038 | 31.052 | 31.065 | 31.079 | 1790 |
| 1800 | 31.079 | 31.092 | 31.106 | 31.119 | 31.133 | 31.147 | 31.160 | 31.174 | 31.187 | 31.201 | 31.214 | 1800 |
| 1810 | 31.214 | 31.228 | 31.241 | 31.255 | 31.268 | 31.282 | 31.295 | 31.309 | 31.322 | 31.336 | 31.349 | 1810 |
| 1820 | 31.349 | 31.363 | 31.376 | 31.389 | 31.403 | 31.416 | 31.430 | 31.443 | 31.457 | 31.470 | 31.483 | 1820 |
| 1830 | 31.483 | 31.497 | 31.510 | 31.524 | 31.537 | 31.550 | 31.564 | 31.577 | 31.590 | 31.604 | 31.617 | 1830 |
| 1840 | 31.617 | 31.630 | 31.644 | 31.657 | 31.670 | 31.683 | 31.697 | 31.710 | 31.723 | 31.737 | 31.750 | 1840 |
| 1850 | 31.750 | 31.763 | 31.776 | 31.790 | 31.803 | 31.816 | 31.829 | 31.842 | 31.856 | 31.869 | 31.882 | 1850 |
| 1860 | 31.882 | 31.895 | 31.908 | 31.922 | 31.935 | 31.948 | 31.961 | 31.974 | 31.987 | 32.001 | 32.014 | 1860 |
| 1870 | 32.014 | 32.027 | 32.040 | 32.053 | 32.066 | 32.079 | 32.092 | 32.105 | 32.118 | 32.132 | 32.145 | 1870 |
| 1880 | 32.145 | 32.158 | 32.171 | 32.184 | 32.197 | 32.210 | 32.223 | 32.236 | 32.249 | 32.262 | 32.275 | 1880 |
| 1890 | 32.275 | 32.288 | 32.301 | 32.314 | 32.327 | 32.340 | 32.353 | 32.366 | 32.378 | 32.391 | 32.404 | 1890 |
| 1900 | 32.404 | 32.417 | 32.430 | 32.443 | 32.456 | 32.469 | 32.482 | 32.495 | 32.507 | 32.520 | 32.533 | 1900 |
| 1910 | 32.533 | 32.546 | 32.559 | 32.572 | 32.584 | 32.597 | 32.610 | 32.623 | 32.636 | 32.649 | 32.661 | 1910 |
| 1920 | 32.661 | 32.674 | 32.687 | 32.700 | 32.712 | 32.725 | 32.738 | 32.751 | 32.763 | 32.776 | 32.789 | 1920 |
| 1930 | 32.789 | 32.801 | 32.814 | 32.827 | 32.840 | 32.852 | 32.865 | 32.878 | 32.890 | 32.903 | 32.915 | 1930 |
| 1940 | 32.915 | 32.928 | 32.941 | 32.953 | 32.966 | 32.979 | 32.991 | 33.004 | 33.016 | 33.029 | 33.041 | 1940 |
| 1950 | 33.041 | 33.054 | 33.067 | 33.079 | 33.092 | 33.104 | 33.117 | 33.129 | 33.142 | 33.154 | 33.167 | 1950 |
| 1960 | 33.167 | 33.179 | 33.192 | 33.204 | 33.217 | 33.229 | 33.242 | 33.254 | 33.266 | 33.279 | 33.291 | 1960 |
| 1970 | 33.291 | 33.304 | 33.316 | 33.329 | 33.341 | 33.353 | 33.366 | 33.378 | 33.390 | 33.403 | 33.415 | 1970 |
| 1980 | 33.415 | 33.427 | 33.440 | 33.452 | 33.464 | 33.477 | 33.489 | 33.501 | 33.514 | 33.526 | 33.538 | 1980 |
| 1990 | 33.538 | 33.550 | 33.563 | 33.575 | 33.587 | 33.599 | 33.612 | 33.624 | 33.636 | 33.648 | 33.660 | 1990 |



TABLE 21 Type C Thermocouple— thermoelectric voltage as a function of temperature (°C); reference junctions at 0 °C

| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| Thermoelectric Voltage in Millivolts | | | | | | | | | | | | |
| 2000 | 33.660 | 33.673 | 33.685 | 33.697 | 33.709 | 33.721 | 33.733 | 33.746 | 33.758 | 33.770 | 33.782 | 2000 |
| 2010 | 33.782 | 33.794 | 33.806 | 33.818 | 33.830 | 33.842 | 33.855 | 33.867 | 33.879 | 33.891 | 33.903 | 2010 |
| 2020 | 33.903 | 33.915 | 33.927 | 33.939 | 33.951 | 33.963 | 33.975 | 33.987 | 33.999 | 34.011 | 34.023 | 2020 |
| 2030 | 34.023 | 34.035 | 34.047 | 34.059 | 34.071 | 34.082 | 34.094 | 34.106 | 34.118 | 34.130 | 34.142 | 2030 |
| 2040 | 34.142 | 34.154 | 34.166 | 34.178 | 34.189 | 34.201 | 34.213 | 34.225 | 34.237 | 34.249 | 34.260 | 2040 |
| 2050 | 34.260 | 34.272 | 34.284 | 34.296 | 34.307 | 34.319 | 34.331 | 34.343 | 34.354 | 34.366 | 34.378 | 2050 |
| 2060 | 34.378 | 34.390 | 34.401 | 34.413 | 34.425 | 34.436 | 34.448 | 34.460 | 34.471 | 34.483 | 34.495 | 2060 |
| 2070 | 34.495 | 34.506 | 34.518 | 34.530 | 34.541 | 34.553 | 34.564 | 34.576 | 34.587 | 34.599 | 34.611 | 2070 |
| 2080 | 34.611 | 34.622 | 34.634 | 34.645 | 34.657 | 34.668 | 34.680 | 34.691 | 34.703 | 34.714 | 34.726 | 2080 |
| 2090 | 34.726 | 34.737 | 34.749 | 34.760 | 34.771 | 34.783 | 34.794 | 34.806 | 34.817 | 34.829 | 34.840 | 2090 |
| 2100 | 34.840 | 34.851 | 34.863 | 34.874 | 34.885 | 34.897 | 34.908 | 34.919 | 34.931 | 34.942 | 34.953 | 2100 |
| 2110 | 34.953 | 34.965 | 34.976 | 34.987 | 34.998 | 35.010 | 35.021 | 35.032 | 35.043 | 35.055 | 35.066 | 2110 |
| 2120 | 35.066 | 35.077 | 35.088 | 35.099 | 35.110 | 35.122 | 35.133 | 35.144 | 35.155 | 35.166 | 35.177 | 2120 |
| 2130 | 35.177 | 35.188 | 35.199 | 35.211 | 35.222 | 35.233 | 35.244 | 35.255 | 35.266 | 35.277 | 35.288 | 2130 |
| 2140 | 35.288 | 35.299 | 35.310 | 35.321 | 35.332 | 35.343 | 35.354 | 35.365 | 35.376 | 35.387 | 35.398 | 2140 |
| 2150 | 35.398 | 35.409 | 35.420 | 35.430 | 35.441 | 35.452 | 35.463 | 35.474 | 35.485 | 35.496 | 35.506 | 2150 |
| 2160 | 35.506 | 35.517 | 35.528 | 35.539 | 35.550 | 35.561 | 35.571 | 35.582 | 35.593 | 35.604 | 35.614 | 2160 |
| 2170 | 35.614 | 35.625 | 35.636 | 35.647 | 35.657 | 35.668 | 35.679 | 35.689 | 35.700 | 35.711 | 35.721 | 2170 |
| 2180 | 35.721 | 35.732 | 35.742 | 35.753 | 35.764 | 35.774 | 35.785 | 35.795 | 35.806 | 35.817 | 35.827 | 2180 |
| 2190 | 35.827 | 35.838 | 35.848 | 35.859 | 35.869 | 35.880 | 35.890 | 35.901 | 35.911 | 35.922 | 35.932 | 2190 |
| 2200 | 35.932 | 35.942 | 35.953 | 35.963 | 35.974 | 35.984 | 35.995 | 36.005 | 36.015 | 36.026 | 36.036 | 2200 |
| 2210 | 36.036 | 36.046 | 36.057 | 36.067 | 36.077 | 36.088 | 36.098 | 36.108 | 36.118 | 36.129 | 36.139 | 2210 |
| 2220 | 36.139 | 36.149 | 36.159 | 36.169 | 36.180 | 36.190 | 36.200 | 36.210 | 36.220 | 36.231 | 36.241 | 2220 |
| 2230 | 36.241 | 36.251 | 36.261 | 36.271 | 36.281 | 36.291 | 36.301 | 36.311 | 36.321 | 36.331 | 36.341 | 2230 |
| 2240 | 36.341 | 36.351 | 36.361 | 36.371 | 36.381 | 36.391 | 36.401 | 36.411 | 36.421 | 36.431 | 36.441 | 2240 |
| 2250 | 36.441 | 36.451 | 36.461 | 36.471 | 36.481 | 36.491 | 36.500 | 36.510 | 36.520 | 36.530 | 36.540 | 2250 |
| 2260 | 36.540 | 36.549 | 36.559 | 36.569 | 36.579 | 36.589 | 36.598 | 36.608 | 36.618 | 36.627 | 36.637 | 2260 |
| 2270 | 36.637 | 36.647 | 36.656 | 36.666 | 36.676 | 36.685 | 36.695 | 36.705 | 36.714 | 36.724 | 36.733 | 2270 |
| 2280 | 36.733 | 36.743 | 36.753 | 36.762 | 36.772 | 36.781 | 36.791 | 36.800 | 36.810 | 36.819 | 36.829 | 2280 |
| 2290 | 36.829 | 36.838 | 36.847 | 36.857 | 36.866 | 36.876 | 36.885 | 36.895 | 36.904 | 36.913 | 36.923 | 2290 |
| 2300 | 36.923 | 36.932 | 36.941 | 36.951 | 36.960 | 36.969 | 36.978 | 36.988 | 36.997 | 37.006 | 37.015 | 2300 |
| 2310 | 37.015 | 37.025 | 37.034 | 37.043 | 37.052 | 37.061 | | | | | | 3210 |

°C 0 1 2 3 4 5 6 7 8 9 10 °C