

Technical Information

Revised Thermocouple Reference Tables

TYPE N
Reference Tables
N.I.S.T.
Monograph 175
Revised to
ITS-90

°C

**Nickel-14.2%
Chromium-1.4% Silicon
vs.
Nickel-4.4% Silicon-
0.1% Magnesium**

MAXIMUM TEMPERATURE RANGE

Thermocouple Grade

- 450 to 2372°F
- 270 to 1300°C

Extension Grade

32 to 392°F
0 to 200°C

LIMITS OF ERROR

(whichever is greater)
Standard: 2.2°C or 0.75% Above 0°C
2.2°C or 2.0% Below 0°C
Special: 1.1°C or 0.4%

COMMENTS, BARE WIRE ENVIRONMENT:

Alternative to Type K; More Stable
at High Temperatures

TEMPERATURE IN DEGREES °C REFERENCE JUNCTION AT 0°C

Thermoelectric Voltage in Millivolts

| °C | -10 | -9 | -8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0 | °C | °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| -260 | -4.345 | -4.345 | -4.344 | -4.344 | -4.343 | -4.342 | -4.341 | -4.340 | -4.339 | -4.337 | -4.336 | -260 | 300 | 9.341 | 9.377 | 9.412 | 9.448 | 9.483 | 9.519 | 9.554 | 9.590 | 9.625 | 9.661 | 9.696 | 300 |
| -250 | -4.338 | -4.334 | -4.332 | -4.330 | -4.328 | -4.326 | -4.324 | -4.321 | -4.319 | -4.318 | -4.313 | -250 | 310 | 9.696 | 9.732 | 9.768 | 9.803 | 9.839 | 9.875 | 9.910 | 9.946 | 9.982 | 10.018 | 10.054 | 310 |
| -240 | -4.313 | -4.310 | -4.307 | -4.304 | -4.300 | -4.297 | -4.293 | -4.289 | -4.285 | -4.281 | -4.277 | -240 | 320 | 10.054 | 10.089 | 10.125 | 10.161 | 10.197 | 10.233 | 10.269 | 10.305 | 10.341 | 10.377 | 10.413 | 320 |
| -230 | -4.277 | -4.273 | -4.268 | -4.263 | -4.258 | -4.254 | -4.248 | -4.243 | -4.238 | -4.232 | -4.226 | -230 | 330 | 10.413 | 10.449 | 10.485 | 10.521 | 10.557 | 10.593 | 10.629 | 10.665 | 10.701 | 10.737 | 10.773 | 330 |
| -220 | -4.226 | -4.221 | -4.215 | -4.209 | -4.202 | -4.196 | -4.189 | -4.183 | -4.176 | -4.169 | -4.162 | -220 | 340 | 10.774 | 10.810 | 10.846 | 10.882 | 10.918 | 10.955 | 10.991 | 11.027 | 11.064 | 11.100 | 11.136 | 340 |
| -210 | -4.162 | -4.154 | -4.147 | -4.140 | -4.132 | -4.124 | -4.116 | -4.108 | -4.100 | -4.091 | -4.083 | -210 | 350 | 11.136 | 11.173 | 11.209 | 11.245 | 11.282 | 11.318 | 11.355 | 11.391 | 11.428 | 11.464 | 11.501 | 350 |
| -200 | -4.083 | -4.074 | -4.066 | -4.057 | -4.048 | -4.038 | -4.029 | -4.020 | -4.010 | -4.000 | -3.990 | -200 | 360 | 11.501 | 11.537 | 11.574 | 11.610 | 11.647 | 11.683 | 11.720 | 11.757 | 11.793 | 11.830 | 11.867 | 360 |
| -190 | -3.990 | -3.980 | -3.970 | -3.960 | -3.950 | -3.939 | -3.928 | -3.918 | -3.907 | -3.898 | -3.884 | -190 | 370 | 11.867 | 11.903 | 11.940 | 11.977 | 12.013 | 12.050 | 12.087 | 12.124 | 12.160 | 12.197 | 12.234 | 370 |
| -180 | -3.884 | -3.873 | -3.862 | -3.850 | -3.838 | -3.827 | -3.815 | -3.803 | -3.790 | -3.778 | -3.766 | -180 | 380 | 12.234 | 12.271 | 12.308 | 12.345 | 12.382 | 12.418 | 12.455 | 12.492 | 12.529 | 12.566 | 12.603 | 380 |
| -170 | -3.766 | -3.753 | -3.740 | -3.728 | -3.715 | -3.702 | -3.688 | -3.675 | -3.662 | -3.648 | -3.634 | -170 | 390 | 12.603 | 12.640 | 12.677 | 12.714 | 12.751 | 12.788 | 12.825 | 12.862 | 12.899 | 12.937 | 12.974 | 390 |
| -160 | -3.634 | -3.621 | -3.607 | -3.593 | -3.578 | -3.564 | -3.550 | -3.535 | -3.521 | -3.506 | -3.491 | -160 | 400 | 12.974 | 13.011 | 13.048 | 13.085 | 13.122 | 13.159 | 13.197 | 13.234 | 13.271 | 13.308 | 13.346 | 400 |
| -150 | -3.491 | -3.476 | -3.461 | -3.446 | -3.431 | -3.415 | -3.400 | -3.384 | -3.368 | -3.352 | -3.336 | -150 | 410 | 13.346 | 13.383 | 13.420 | 13.457 | 13.495 | 13.532 | 13.569 | 13.607 | 13.644 | 13.682 | 13.719 | 410 |
| -140 | -3.336 | -3.320 | -3.304 | -3.288 | -3.271 | -3.255 | -3.238 | -3.221 | -3.205 | -3.188 | -3.171 | -140 | 420 | 13.719 | 13.756 | 13.794 | 13.831 | 13.869 | 13.906 | 13.944 | 13.981 | 14.019 | 14.056 | 14.094 | 420 |
| -130 | -3.171 | -3.153 | -3.136 | -3.119 | -3.101 | -3.084 | -3.066 | -3.048 | -3.030 | -3.012 | -2.994 | -130 | 430 | 14.094 | 14.131 | 14.169 | 14.206 | 14.244 | 14.281 | 14.319 | 14.356 | 14.394 | 14.432 | 14.469 | 430 |
| -120 | -2.994 | -2.976 | -2.958 | -2.939 | -2.921 | -2.902 | -2.883 | -2.865 | -2.846 | -2.827 | -2.808 | -120 | 440 | 14.469 | 14.507 | 14.545 | 14.582 | 14.620 | 14.658 | 14.695 | 14.733 | 14.771 | 14.809 | 14.846 | 440 |
| -110 | -2.808 | -2.789 | -2.769 | -2.750 | -2.730 | -2.711 | -2.691 | -2.672 | -2.652 | -2.632 | -2.612 | -110 | 450 | 14.848 | 14.884 | 14.922 | 14.960 | 14.998 | 15.035 | 15.073 | 15.111 | 15.149 | 15.187 | 15.225 | 450 |
| -100 | -2.612 | -2.592 | -2.571 | -2.551 | -2.531 | -2.510 | -2.490 | -2.469 | -2.448 | -2.428 | -2.407 | -100 | 460 | 15.225 | 15.262 | 15.300 | 15.338 | 15.376 | 15.414 | 15.452 | 15.490 | 15.528 | 15.566 | 15.604 | 460 |
| -90 | -2.407 | -2.386 | -2.365 | -2.344 | -2.322 | -2.301 | -2.280 | -2.258 | -2.237 | -2.215 | -2.193 | -90 | 470 | 15.604 | 15.642 | 15.680 | 15.718 | 15.756 | 15.794 | 15.832 | 15.870 | 15.908 | 15.946 | 15.984 | 470 |
| -80 | -2.193 | -2.172 | -2.150 | -2.128 | -2.106 | -2.084 | -2.062 | -2.039 | -2.017 | -1.995 | -1.972 | -80 | 480 | 15.984 | 16.022 | 16.060 | 16.099 | 16.137 | 16.175 | 16.213 | 16.251 | 16.289 | 16.327 | 16.366 | 480 |
| -70 | -1.972 | -1.950 | -1.927 | -1.905 | -1.882 | -1.859 | -1.836 | -1.813 | -1.790 | -1.767 | -1.744 | -70 | 490 | 16.366 | 16.404 | 16.442 | 16.480 | 16.518 | 16.557 | 16.595 | 16.633 | 16.671 | 16.710 | 16.748 | 490 |
| -60 | -1.744 | -1.721 | -1.698 | -1.674 | -1.651 | -1.627 | -1.604 | -1.580 | -1.557 | -1.533 | -1.509 | -60 | 500 | 16.748 | 16.786 | 16.824 | 16.863 | 16.901 | 16.939 | 16.978 | 17.016 | 17.054 | 17.093 | 17.131 | 500 |
| -50 | -1.509 | -1.485 | -1.462 | -1.438 | -1.414 | -1.390 | -1.366 | -1.341 | -1.317 | -1.293 | -1.269 | -50 | 510 | 17.131 | 17.169 | 17.208 | 17.246 | 17.285 | 17.323 | 17.362 | 17.400 | 17.438 | 17.477 | 17.515 | 510 |
| -40 | -1.269 | -1.244 | -1.220 | -1.195 | -1.171 | -1.146 | -1.122 | -1.097 | -1.072 | -1.048 | -1.023 | -40 | 520 | 17.515 | 17.554 | 17.592 | 17.630 | 17.669 | 17.707 | 17.746 | 17.784 | 17.823 | 17.861 | 17.900 | 520 |
| -30 | -1.023 | -0.998 | -0.973 | -0.948 | -0.923 | -0.898 | -0.873 | -0.848 | -0.823 | -0.798 | -0.772 | -30 | 530 | 17.900 | 17.938 | 17.977 | 18.016 | 18.054 | 18.093 | 18.131 | 18.170 | 18.208 | 18.247 | 18.286 | 530 |
| -20 | -0.772 | -0.747 | -0.722 | -0.696 | -0.671 | -0.646 | -0.620 | -0.595 | -0.569 | -0.544 | -0.518 | -20 | 540 | 18.286 | 18.324 | 18.363 | 18.401 | 18.440 | 18.479 | 18.517 | 18.556 | 18.595 | 18.633 | 18.672 | 540 |
| -10 | -0.518 | -0.492 | -0.467 | -0.441 | -0.415 | -0.390 | -0.364 | -0.338 | -0.312 | -0.286 | -0.260 | -10 | 550 | 18.672 | 18.711 | 18.749 | 18.788 | 18.827 | 18.866 | 18.904 | 18.943 | 18.982 | 19.020 | 19.059 | 550 |
| 0 | -0.260 | -0.234 | -0.209 | -0.183 | -0.157 | -0.131 | -0.104 | -0.078 | -0.052 | -0.026 | 0.000 | 0 | 560 | 19.059 | 19.098 | 19.136 | 19.175 | 19.214 | 19.253 | 19.292 | 19.330 | 19.369 | 19.408 | 19.447 | 560 |
| 0 | 0.000 | 0.026 | 0.052 | 0.078 | 0.104 | 0.130 | 0.156 | 0.182 | 0.208 | 0.235 | 0.261 | 0 | 570 | 19.447 | 19.485 | 19.524 | 19.563 | 19.602 | 19.641 | 19.680 | 19.718 | 19.757 | 19.796 | 19.835 | 570 |
| 10 | 0.261 | 0.287 | 0.313 | 0.340 | 0.366 | 0.393 | 0.419 | 0.446 | 0.472 | 0.499 | 0.525 | 10 | 580 | 19.835 | 19.874 | 19.913 | 19.952 | 19.990 | 20.029 | 20.068 | 20.107 | 20.146 | 20.185 | 20.224 | 580 |
| 20 | 0.525 | 0.552 | 0.578 | 0.605 | 0.632 | 0.659 | 0.685 | 0.712 | 0.739 | 0.766 | 0.793 | 20 | 590 | 20.224 | 20.263 | 20.302 | 20.341 | 20.379 | 20.418 | 20.457 | 20.496 | 20.535 | 20.574 | 20.613 | 590 |
| 30 | 0.793 | 0.820 | 0.847 | 0.874 | 0.901 | 0.928 | 0.955 | 0.983 | 1.010 | 1.037 | 1.065 | 30 | 600 | 20.613 | 20.652 | 20.691 | 20.730 | 20.769 | 20.808 | 20.847 | 20.886 | 20.925 | 20.964 | 21.003 | 600 |
| 40 | 1.065 | 1.092 | 1.119 | 1.147 | 1.174 | 1.202 | 1.229 | 1.257 | 1.284 | 1.312 | 1.340 | 40 | 610 | 21.003 | 21.042 | 21.081 | 21.120 | 21.159 | 21.198 | 21.237 | 21.276 | 21.315 | 21.354 | 21.393 | 610 |
| 50 | 1.340 | 1.368 | 1.395 | 1.423 | 1.451 | 1.479 | 1.507 | 1.535 | 1.563 | 1.591 | 1.619 | 50 | 620 | 21.393 | 21.432 | 21.471 | 21.510 | 21.549 | 21.588 | 21.628 | 21.667 | 21.706 | 21.745 | 21.784 | 620 |
| 60 | 1.619 | 1.647 | 1.675 | 1.703 | 1.732 | 1.760 | 1.788 | 1.817 | 1.845 | 1.873 | 1.902 | 60 | 630 | 21.784 | 21.823 | 21.862 | 21.901 | 21.940 | 21.979 | 22.018 | 22.058 | 22.097 | 22.136 | 22.175 | 630 |
| 70 | 1.902 | 1.930 | 1.959 | 1.988 | 2.016 | 2.045 | 2.074 | 2.102 | 2.131 | 2.160 | 2.189 | 70 | 640 | 22.175 | 22.214 | 22.253 | 22.292 | 22.331 | 22.370 | 22.410 | 22.449 | 22.488 | 22.527 | 22.566 | 640 |
| 80 | 2.189 | 2.218 | 2.247 | 2.276 | 2.305 | 2.334 | 2.363 | 2.392 | 2.421 | 2.450 | 2.479 | 80 | 650 | 22.566 | 22.605 | 22.644 | 22.684 | 22.723 | 22.762 | 22.801 | 22.840 | 22.879 | 22.918 | 22.957 | 650 |
| 90 | 2.480 | 2.509 | 2.538 | 2.568 | 2.597 | 2.626 | 2.656 | 2.685 | 2.715 | 2.744 | 2.774 | 90 | 660 | 22.957 | 22.997 | 23.036 | 23.075 | 23.115 | 23.154 | 23.193 | 23.232 | 23.271 | 23.311 | 23.350 | 660 |
| 100 | 2.774 | 2.804 | 2.833 | 2.863 | 2.893 | 2.923 | 2.953 | 2.983 | 3.012 | 3.042 | 3.072 | 100 | 670 | 23.350 | 23.389 | 23.428 | 23.467 | 23.507 | 23.546 | 23.585 | 23.624 | 23.663 | 23.703 | 23.742 | 670 |
| 110 | 3.072 | 3.102 | 3.133 | 3.163 | 3.193 | 3.223 | 3.253 | 3.283 | 3.314 | 3.344 | 3.374 | 110 | 680 | 23.742 | 23.781 | 23.820 | 23.860 | 23.899 | 23.938 | 23.977 | 24.016 | 24.056 | 24.095 | 24.134 | 680 |
| 120 | 3.374 | 3.405 | 3.435 | 3.466 | 3.496 | 3.527 | 3.557 | 3.588 | 3.619 | 3.649 | 3.680 | 120 | 690 | 24.134 | 24.173 | 24.213 | 24.252 | 24.291 | 24.330 | 24.370 | 24.409 | 24.448 | 24.487 | 24.527 | 690 |
| 130 | 3.680 | 3.711 | 3.742 | 3.772 | 3.803 | 3.834 | 3.865 | 3.896 | 3.927 | 3.958 | 3.989 | 130 | 700 | 24.527 | 24.566 | 24.605 | 24.644 | 24.684 | 24.723 | 24.762 | 24.801 | 24.841 | 24.880 | 24.919 | 700 |
| 140 | 3.989 | 4.020 | 4.051 | 4.083 | 4.114 | 4.145 | 4.176 | 4.208 | 4.239 | 4.270 | 4.302 | 140 | 710 | 24.919 | 24.959 | 24.998 | 25.037 | 25.076 | 25.116 | 25.155 | 25.194 | 25.233 | 25.273 | 25.312 | 710 |
| 150 | 4.302 | 4.333 | 4.365 | 4.396 | 4.428 | 4.459 | 4.491 | 4.523 | 4.554 | 4.586 | 4.6 | | | | | | | | | | | | | | |

Technical Information

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MAXIMUM TEMPERATURE RANGE

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Extension Grade

32 to 392°F
0 to 200°C

LIMITS OF ERROR

(whichever is greater)

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TEMPERATURE IN DEGREES °C

REFERENCE JUNCTION AT 0°C

°C

**Nickel-14.2%
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vs.
Nickel-4.4% Silicon-
0.1% Magnesium**

TYPE N

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Tables
N.I.S.T.
Monograph 175
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ITS-90

Thermoelectric Voltage in Millivolts

| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C | °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| 900 | 32.371 | 32.410 | 32.449 | 32.488 | 32.527 | 32.566 | 32.605 | 32.644 | 32.683 | 32.722 | 32.761 | 900 | 1150 | 41.976 | 42.014 | 42.052 | 42.089 | 42.127 | 42.164 | 42.202 | 42.239 | 42.277 | 42.314 | 42.352 | 1150 |
| 910 | 32.761 | 32.800 | 32.839 | 32.878 | 32.917 | 32.956 | 32.995 | 33.034 | 33.073 | 33.112 | 33.151 | 910 | 1160 | 42.352 | 42.390 | 42.427 | 42.465 | 42.502 | 42.540 | 42.577 | 42.614 | 42.652 | 42.689 | 42.727 | 1160 |
| 920 | 33.151 | 33.190 | 33.229 | 33.268 | 33.307 | 33.346 | 33.385 | 33.424 | 33.463 | 33.502 | 33.541 | 920 | 1170 | 42.727 | 42.764 | 42.802 | 42.839 | 42.877 | 42.914 | 42.951 | 42.989 | 43.026 | 43.064 | 43.101 | 1170 |
| 930 | 33.541 | 33.580 | 33.619 | 33.658 | 33.697 | 33.736 | 33.774 | 33.813 | 33.852 | 33.891 | 33.930 | 930 | 1180 | 43.101 | 43.138 | 43.176 | 43.213 | 43.250 | 43.288 | 43.325 | 43.362 | 43.399 | 43.437 | 43.474 | 1180 |
| 940 | 33.930 | 33.969 | 34.008 | 34.047 | 34.086 | 34.124 | 34.163 | 34.202 | 34.241 | 34.280 | 34.319 | 940 | 1190 | 43.474 | 43.511 | 43.549 | 43.586 | 43.623 | 43.660 | 43.698 | 43.735 | 43.772 | 43.809 | 43.846 | 1190 |
| 950 | 34.319 | 34.358 | 34.396 | 34.435 | 34.474 | 34.513 | 34.552 | 34.591 | 34.629 | 34.668 | 34.707 | 950 | 1200 | 43.846 | 43.884 | 43.921 | 43.958 | 43.995 | 44.032 | 44.069 | 44.106 | 44.144 | 44.181 | 44.218 | 1900 |
| 960 | 34.707 | 34.746 | 34.785 | 34.823 | 34.862 | 34.901 | 34.940 | 34.979 | 35.017 | 35.056 | 35.095 | 960 | 1210 | 44.218 | 44.255 | 44.292 | 44.329 | 44.366 | 44.403 | 44.440 | 44.477 | 44.514 | 44.551 | 44.588 | 1210 |
| 970 | 35.095 | 35.134 | 35.172 | 35.211 | 35.250 | 35.289 | 35.327 | 35.366 | 35.405 | 35.444 | 35.482 | 970 | 1220 | 44.588 | 44.625 | 44.662 | 44.699 | 44.736 | 44.773 | 44.810 | 44.847 | 44.884 | 44.921 | 44.958 | 1220 |
| 980 | 35.482 | 35.521 | 35.560 | 35.598 | 35.637 | 35.676 | 35.714 | 35.753 | 35.792 | 35.831 | 35.869 | 980 | 1230 | 44.958 | 44.995 | 45.032 | 45.069 | 45.105 | 45.142 | 45.179 | 45.216 | 45.253 | 45.290 | 45.326 | 1230 |
| 990 | 35.869 | 35.908 | 35.946 | 35.985 | 36.024 | 36.062 | 36.101 | 36.140 | 36.178 | 36.217 | 36.256 | 990 | 1240 | 45.326 | 45.363 | 45.400 | 45.437 | 45.474 | 45.510 | 45.547 | 45.584 | 45.621 | 45.657 | 45.694 | 1240 |
| 1000 | 36.256 | 38.294 | 36.333 | 36.371 | 36.410 | 36.449 | 36.487 | 36.526 | 36.564 | 36.603 | 36.641 | 1000 | 1250 | 45.694 | 45.731 | 45.767 | 45.804 | 45.841 | 45.877 | 45.914 | 45.951 | 45.987 | 46.024 | 46.060 | 1250 |
| 1010 | 36.841 | 36.680 | 36.718 | 36.757 | 36.796 | 36.834 | 36.873 | 36.911 | 36.950 | 36.988 | 37.027 | 1010 | 1260 | 46.060 | 46.097 | 46.133 | 46.170 | 46.207 | 46.243 | 46.280 | 46.316 | 46.353 | 46.389 | 46.425 | 1260 |
| 1020 | 37.027 | 37.065 | 37.104 | 37.142 | 37.181 | 37.219 | 37.258 | 37.296 | 37.334 | 37.373 | 37.411 | 1020 | 1270 | 46.425 | 46.462 | 46.498 | 46.535 | 46.571 | 46.608 | 46.644 | 46.680 | 46.717 | 46.753 | 46.789 | 1270 |
| 1030 | 37.411 | 37.450 | 37.488 | 37.527 | 37.565 | 37.603 | 37.642 | 37.680 | 37.719 | 37.757 | 37.795 | 1030 | 1280 | 46.789 | 46.826 | 46.862 | 46.898 | 46.935 | 46.971 | 47.007 | 47.043 | 47.079 | 47.116 | 47.152 | 1280 |
| 1040 | 37.795 | 37.834 | 37.872 | 37.911 | 37.949 | 37.987 | 38.026 | 38.064 | 38.102 | 38.141 | 38.179 | 1040 | 1290 | 47.152 | 47.188 | 47.224 | 47.260 | 47.296 | 47.333 | 47.369 | 47.405 | 47.441 | 47.477 | 47.513 | 1290 |
| 1050 | 38.179 | 38.217 | 38.256 | 38.294 | 38.332 | 38.370 | 38.409 | 38.447 | 38.485 | 38.524 | 38.562 | 1050 | | | | | | | | | | | | | |
| 1060 | 38.562 | 38.600 | 38.638 | 38.677 | 38.715 | 38.753 | 38.791 | 38.829 | 38.868 | 38.906 | 38.944 | 1060 | | | | | | | | | | | | | |
| 1070 | 38.944 | 38.982 | 39.020 | 39.059 | 39.097 | 39.135 | 39.173 | 39.211 | 39.249 | 39.287 | 39.326 | 1070 | | | | | | | | | | | | | |
| 1080 | 39.326 | 39.364 | 39.402 | 39.440 | 39.478 | 39.516 | 39.554 | 39.592 | 39.630 | 39.668 | 39.706 | 1080 | | | | | | | | | | | | | |
| 1090 | 39.708 | 39.744 | 39.783 | 39.821 | 39.859 | 39.897 | 39.935 | 39.973 | 40.011 | 40.049 | 40.087 | 1090 | | | | | | | | | | | | | |
| 1100 | 40.087 | 40.125 | 40.163 | 40.201 | 40.238 | 40.276 | 40.314 | 40.352 | 40.390 | 40.428 | 40.466 | 1100 | | | | | | | | | | | | | |
| 1110 | 40.466 | 40.504 | 40.542 | 40.580 | 40.618 | 40.655 | 40.693 | 40.731 | 40.769 | 40.807 | 40.845 | 1110 | | | | | | | | | | | | | |
| 1120 | 40.845 | 40.883 | 40.920 | 40.958 | 40.996 | 41.034 | 41.072 | 41.109 | 41.147 | 41.185 | 41.223 | 1120 | | | | | | | | | | | | | |
| 1130 | 41.223 | 41.260 | 41.298 | 41.336 | 41.374 | 41.411 | 41.449 | 41.487 | 41.525 | 41.562 | 41.600 | 1130 | | | | | | | | | | | | | |
| 1140 | 41.600 | 41.638 | 41.675 | 41.713 | 41.751 | 41.788 | 41.826 | 41.864 | 41.901 | 41.939 | 41.976 | 1140 | | | | | | | | | | | | | |
| °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C | °C | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | °C |