

**MAXIMUM TEMPERATURE RANGE**

**Thermocouple Grade**

- 328 to 2282°F  
- 200 to 1250°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

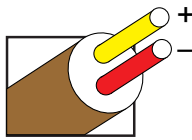
2.2°C or 2.0% Below 0°C

**Special:** 1.1°C or 0.4%

**COMMENTS, BARE WIRE ENVIRONMENT:**

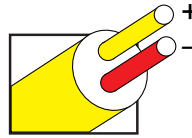
Clean Oxidizing and Inert; Limited Use in Vacuum or Reducing; Wide Temperature Range; Most Popular Calibration

**TEMPERATURE IN DEGREES °C**  
**REFERENCE JUNCTION AT 0°C**



**Thermocouple Grade**

**Nickel-Chromium**  
**vs.**  
**Nickel-Aluminum**



**Extension Grade**

**Revised Thermocouple Reference Tables**

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

Z

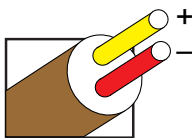
**Thermoelectric Voltage in Millivolts**

| °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 | -6.458 | -6.457 | -6.456 | -6.455 | -6.453 | -6.452 | -6.450 | -6.448 | -6.446 | -6.444 | -6.441 | -260 | 250 | 10.153 | 10.194 | 10.235 | 10.276 | 10.316 | 10.357 | 10.398 | 10.439 | 10.480 | 10.520 | 10.561 | 250 |
| -250 | -6.441 | -6.438 | -6.435 | -6.432 | -6.429 | -6.425 | -6.421 | -6.417 | -6.413 | -6.408 | -6.404 | -250 | 260 | 10.561 | 10.602 | 10.643 | 10.684 | 10.725 | 10.766 | 10.807 | 10.848 | 10.889 | 10.930 | 10.971 | 260 |
| -240 | -6.404 | -6.399 | -6.393 | -6.388 | -6.382 | -6.377 | -6.370 | -6.364 | -6.358 | -6.351 | -6.344 | -240 | 270 | 10.971 | 11.012 | 11.053 | 11.094 | 11.135 | 11.176 | 11.217 | 11.259 | 11.300 | 11.341 | 11.382 | 270 |
| -230 | -6.344 | -6.337 | -6.329 | -6.322 | -6.314 | -6.306 | -6.297 | -6.289 | -6.280 | -6.271 | -6.262 | -230 | 280 | 11.382 | 11.423 | 11.465 | 11.506 | 11.547 | 11.588 | 11.630 | 11.671 | 11.712 | 11.753 | 11.795 | 280 |
| -220 | -6.262 | -6.252 | -6.243 | -6.233 | -6.223 | -6.213 | -6.202 | -6.192 | -6.181 | -6.170 | -6.158 | -220 | 290 | 11.795 | 11.836 | 11.877 | 11.919 | 11.960 | 12.001 | 12.043 | 12.084 | 12.126 | 12.167 | 12.209 | 290 |
| -210 | -6.158 | -6.147 | -6.135 | -6.123 | -6.111 | -6.099 | -6.087 | -6.074 | -6.061 | -6.048 | -6.035 | -210 | 300 | 12.209 | 12.250 | 12.291 | 12.333 | 12.374 | 12.416 | 12.457 | 12.499 | 12.540 | 12.582 | 12.624 | 300 |
| -200 | -6.035 | -6.021 | -6.007 | -5.994 | -5.980 | -5.965 | -5.951 | -5.936 | -5.922 | -5.907 | -5.891 | -200 | 310 | 12.624 | 12.665 | 12.707 | 12.748 | 12.790 | 12.831 | 12.873 | 12.915 | 12.956 | 12.998 | 13.040 | 310 |
| -190 | -5.891 | -5.876 | -5.861 | -5.845 | -5.829 | -5.813 | -5.797 | -5.780 | -5.763 | -5.747 | -5.730 | -190 | 320 | 13.040 | 13.081 | 13.123 | 13.165 | 13.206 | 13.248 | 13.290 | 13.331 | 13.373 | 13.415 | 13.457 | 320 |
| -180 | -5.730 | -5.713 | -5.695 | -5.678 | -5.660 | -5.642 | -5.624 | -5.606 | -5.588 | -5.569 | -5.550 | -180 | 330 | 13.457 | 13.498 | 13.540 | 13.582 | 13.624 | 13.665 | 13.707 | 13.749 | 13.791 | 13.833 | 13.874 | 330 |
| -170 | -5.550 | -5.531 | -5.512 | -5.493 | -5.474 | -5.454 | -5.435 | -5.415 | -5.395 | -5.374 | -5.354 | -170 | 340 | 13.874 | 13.916 | 13.958 | 14.000 | 14.042 | 14.084 | 14.126 | 14.167 | 14.209 | 14.251 | 14.293 | 340 |
| -160 | -5.354 | -5.333 | -5.313 | -5.292 | -5.271 | -5.250 | -5.228 | -5.207 | -5.185 | -5.163 | -5.141 | -160 | 350 | 14.293 | 14.335 | 14.377 | 14.419 | 14.461 | 14.503 | 14.545 | 14.587 | 14.629 | 14.671 | 14.713 | 350 |
| -150 | -5.141 | -5.119 | -5.097 | -5.074 | -5.051 | -5.029 | -5.006 | -4.983 | -4.960 | -4.936 | -4.913 | -150 | 360 | 14.713 | 14.755 | 14.797 | 14.839 | 14.881 | 14.923 | 14.965 | 15.007 | 15.049 | 15.091 | 15.133 | 360 |
| -140 | -4.913 | -4.889 | -4.865 | -4.841 | -4.817 | -4.793 | -4.768 | -4.744 | -4.719 | -4.694 | -4.669 | -140 | 370 | 15.133 | 15.175 | 15.217 | 15.259 | 15.301 | 15.343 | 15.385 | 15.427 | 15.469 | 15.511 | 15.554 | 370 |
| -130 | -4.669 | -4.644 | -4.618 | -4.593 | -4.567 | -4.542 | -4.516 | -4.490 | -4.463 | -4.437 | -4.411 | -130 | 380 | 15.554 | 15.596 | 15.638 | 15.680 | 15.722 | 15.764 | 15.806 | 15.848 | 15.891 | 15.933 | 15.975 | 380 |
| -120 | -4.411 | -4.384 | -4.357 | -4.330 | -4.303 | -4.276 | -4.249 | -4.221 | -4.194 | -4.166 | -4.138 | -120 | 390 | 15.975 | 16.017 | 16.059 | 16.102 | 16.144 | 16.186 | 16.228 | 16.270 | 16.313 | 16.355 | 16.397 | 390 |
| -110 | -4.138 | -4.110 | -4.082 | -4.054 | -4.025 | -3.997 | -3.968 | -3.939 | -3.911 | -3.882 | -3.852 | -110 | 400 | 16.397 | 16.439 | 16.482 | 16.524 | 16.566 | 16.608 | 16.651 | 16.693 | 16.735 | 16.778 | 16.820 | 400 |
| -100 | -3.852 | -3.823 | -3.794 | -3.764 | -3.734 | -3.705 | -3.675 | -3.645 | -3.614 | -3.584 | -3.554 | -100 | 410 | 16.820 | 16.862 | 16.904 | 16.947 | 16.989 | 17.031 | 17.074 | 17.116 | 17.158 | 17.201 | 17.243 | 410 |
| -90  | -3.554 | -3.523 | -3.492 | -3.462 | -3.431 | -3.400 | -3.368 | -3.337 | -3.306 | -3.274 | -3.243 | -90  | 420 | 17.243 | 17.285 | 17.327 | 17.370 | 17.413 | 17.455 | 17.497 | 17.540 | 17.582 | 17.624 | 17.667 | 420 |
| -80  | -3.243 | -3.211 | -3.179 | -3.147 | -3.115 | -3.083 | -3.050 | -3.018 | -2.986 | -2.953 | -2.920 | -80  | 430 | 17.667 | 17.709 | 17.752 | 17.794 | 17.837 | 17.879 | 17.921 | 17.964 | 18.006 | 18.049 | 18.091 | 430 |
| -70  | -2.920 | -2.887 | -2.854 | -2.821 | -2.788 | -2.755 | -2.721 | -2.688 | -2.654 | -2.620 | -2.587 | -70  | 440 | 18.091 | 18.134 | 18.176 | 18.218 | 18.261 | 18.303 | 18.346 | 18.388 | 18.431 | 18.473 | 18.516 | 440 |
| -60  | -2.587 | -2.553 | -2.519 | -2.485 | -2.450 | -2.416 | -2.382 | -2.347 | -2.312 | -2.278 | -2.243 | -60  | 450 | 18.516 | 18.558 | 18.601 | 18.643 | 18.686 | 18.728 | 18.771 | 18.813 | 18.856 | 18.899 | 18.941 | 450 |
| -50  | -2.243 | -2.208 | -2.173 | -2.138 | -2.103 | -2.067 | -2.032 | -1.996 | -1.961 | -1.925 | -1.889 | -50  | 460 | 18.941 | 18.983 | 19.026 | 19.068 | 19.111 | 19.154 | 19.196 | 19.239 | 19.281 | 19.324 | 19.366 | 460 |
| -40  | -1.889 | -1.854 | -1.818 | -1.782 | -1.745 | -1.709 | -1.673 | -1.637 | -1.600 | -1.564 | -1.527 | -40  | 470 | 19.366 | 19.409 | 19.451 | 19.494 | 19.537 | 19.579 | 19.622 | 19.664 | 19.707 | 19.750 | 19.792 | 470 |
| -30  | -1.527 | -1.490 | -1.453 | -1.417 | -1.380 | -1.343 | -1.305 | -1.268 | -1.231 | -1.194 | -1.156 | -30  | 480 | 19.792 | 19.835 | 19.877 | 19.920 | 19.962 | 20.005 | 20.048 | 20.090 | 20.133 | 20.175 | 20.218 | 480 |
| -20  | -1.156 | -1.119 | -1.081 | -1.043 | -1.006 | -0.968 | -0.930 | -0.892 | -0.854 | -0.816 | -0.778 | -20  | 490 | 20.218 | 20.261 | 20.303 | 20.346 | 20.389 | 20.431 | 20.474 | 20.516 | 20.559 | 20.602 | 20.644 | 490 |
| -10  | -0.778 | -0.739 | -0.701 | -0.663 | -0.624 | -0.586 | -0.547 | -0.508 | -0.470 | -0.431 | -0.392 | -10  | 500 | 20.644 | 20.687 | 20.730 | 20.772 | 20.815 | 20.857 | 20.900 | 20.943 | 20.985 | 21.028 | 21.071 | 500 |
| 0    | -0.392 | -0.353 | -0.314 | -0.275 | -0.236 | -0.197 | -0.157 | -0.118 | -0.079 | -0.039 | 0.000  | 0    | 510 | 21.071 | 21.113 | 21.156 | 21.199 | 21.241 | 21.284 | 21.326 | 21.369 | 21.412 | 21.454 | 21.497 | 510 |
| 0    | 0.000  | 0.039  | 0.079  | 0.119  | 0.158  | 0.198  | 0.238  | 0.277  | 0.317  | 0.357  | 0.397  | 0    | 520 | 21.497 | 21.540 | 21.582 | 21.625 | 21.668 | 21.710 | 21.753 | 21.796 | 21.838 | 21.881 | 21.924 | 520 |
| 10   | 0.397  | 0.437  | 0.477  | 0.517  | 0.557  | 0.597  | 0.637  | 0.677  | 0.718  | 0.758  | 0.798  | 10   | 530 | 21.924 | 21.966 | 22.009 | 22.052 | 22.094 | 22.137 | 22.179 | 22.222 | 22.265 | 22.307 | 22.350 | 530 |
| 20   | 0.798  | 0.838  | 0.879  | 0.919  | 0.960  | 1.001  | 1.041  | 1.081  | 1.122  | 1.163  | 1.203  | 20   | 540 | 22.350 | 22.393 | 22.435 | 22.478 | 22.521 | 22.563 | 22.606 | 22.649 | 22.691 | 22.734 | 22.776 | 540 |
| 30   | 1.203  | 1.244  | 1.285  | 1.326  | 1.366  | 1.407  | 1.448  | 1.489  | 1.530  | 1.571  | 1.612  | 30   | 550 | 22.776 | 22.819 | 22.862 | 22.904 | 22.947 | 22.990 | 23.032 | 23.075 | 23.117 | 23.160 | 23.203 | 550 |
| 40   | 1.612  | 1.653  | 1.694  | 1.735  | 1.776  | 1.817  | 1.858  | 1.899  | 1.941  | 1.982  | 2.023  | 40   | 560 | 23.203 | 23.245 | 23.288 | 23.331 | 23.373 | 23.416 | 23.458 | 23.501 | 23.544 | 23.586 | 23.629 | 560 |
| 50   | 2.023  | 2.064  | 2.106  | 2.147  | 2.188  | 2.230  | 2.271  | 2.312  | 2.354  | 2.395  | 2.436  | 50   | 570 | 23.629 | 23.671 | 23.714 | 23.757 | 23.799 | 23.842 | 23.884 | 23.927 | 23.970 | 24.012 | 24.055 | 570 |
| 60   | 2.436  | 2.478  | 2.519  | 2.561  | 2.602  | 2.644  | 2.685  | 2.727  | 2.768  | 2.810  | 2.851  | 60   | 580 | 24.055 | 24.097 | 24.140 | 24.182 | 24.225 | 24.267 | 24.310 | 24.353 | 24.395 | 24.438 | 24.480 | 580 |
| 70   | 2.851  | 2.893  | 2.934  | 2.976  | 3.017  | 3.059  | 3.100  | 3.142  | 3.184  | 3.225  | 3.267  | 70   | 590 | 24.480 | 24.523 | 24.565 | 24.608 | 24.650 | 24.693 | 24.735 | 24.778 | 24.820 | 24.863 | 24.905 | 590 |
| 80   | 3.267  | 3.308  | 3.350  | 3.391  | 3.433  | 3.474  | 3.516  | 3.557  | 3.599  | 3.640  | 3.682  | 80   | 600 | 24.905 | 24.948 | 24.990 | 25.033 | 25.075 | 25.118 | 25.160 | 25.203 | 25.245 | 25.288 | 25.330 | 600 |
| 90   | 3.682  | 3.723  | 3.765  | 3.806  | 3.848  | 3.889  | 3.931  | 3.972  | 4.013  | 4.055  | 4.096  | 90   | 610 | 25.330 | 25.373 | 25.415 | 25.458 | 25.500 | 25.543 | 25.585 | 25.627 | 25.670 | 25.712 | 25.755 | 610 |
| 100  | 4.096  | 4.138  | 4.179  | 4.220  | 4.262  | 4.303  | 4.344  | 4.385  | 4.427  | 4.468  | 4.509  | 100  | 620 | 25.755 | 25.797 | 25.840 | 25.882 | 25.924 | 25.967 | 26.009 | 26.052 | 26.094 | 26.136 | 26.179 | 620 |
| 110  | 4.509  | 4.550  | 4.591  | 4.633  | 4.674  | 4.715  | 4.756  | 4.797  | 4.838  | 4.879  | 4.920  | 110  | 630 | 26.179 | 26.221 | 26.263 | 26.306 | 26.348 | 26.390 | 26.433 | 26.475 | 26.517 | 26.560 | 26.602 | 630 |
| 120  | 4.920  | 4.961  | 5.002  | 5.043  | 5.084  | 5.124  | 5.165  | 5.206  | 5.247  | 5.288  | 5.328  | 120  | 640 | 26.602 | 26.644 | 26.687 | 26.729 | 26.771 | 26.814 | 26.856 | 26.898 | 26.940 | 26.983 | 27.025 | 640 |
| 130  | 5.328  | 5.369  | 5.410  | 5.450  | 5.491  | 5.532  | 5.572  | 5.613  | 5.653  | 5.694  | 5.735  | 130  | 650 | 27.025 | 27.067 | 27.109 | 27.152 | 27.194 | 27.236 | 27.278 | 27.320 | 27.363 | 27.405 | 27.447 | 650 |
| 140  | 5.735  |        |        |        |        |        |        |        |        |        |        |      |     |        |        |        |        |        |        |        |        |        |        |        |     |

# Revised Thermocouple Reference Tables

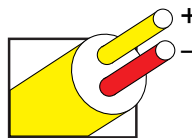
# TYPE K

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



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Nickel-Chromium  
VS.  
Nickel-Aluminum



Extension Grade

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 - 328 to 2282°F  
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 (whichever is greater)  
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 2.2°C or 2.0% Below 0°C  
**Special:** 1.1°C or 0.4%  
**COMMENTS, BARE WIRE ENVIRONMENT:**  
 Clean Oxidizing and Inert; Limited Use in Vacuum or Reducing; Wide Temperature Range; Most Popular Calibration  
**TEMPERATURE IN DEGREES °C**  
**REFERENCE JUNCTION AT 0°C**

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   |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|
| 800  | 33.275 | 33.316 | 33.357 | 33.398 | 33.439 | 33.480 | 33.521 | 33.562 | 33.603 | 33.644 | 33.685 | 800  | 1100 | 45.119 | 45.157 | 45.194 | 45.232 | 45.270 | 45.308 | 45.346 | 45.383 | 45.421 | 45.459 | 45.497 | 1100 |
| 810  | 33.685 | 33.726 | 33.767 | 33.808 | 33.848 | 33.889 | 33.930 | 33.971 | 34.012 | 34.053 | 34.093 | 810  | 1110 | 45.497 | 45.534 | 45.572 | 45.610 | 45.647 | 45.685 | 45.723 | 45.760 | 45.798 | 45.836 | 45.873 | 1110 |
| 820  | 34.093 | 34.134 | 34.175 | 34.216 | 34.257 | 34.297 | 34.338 | 34.379 | 34.420 | 34.460 | 34.501 | 820  | 1120 | 45.873 | 45.911 | 45.948 | 45.986 | 46.024 | 46.061 | 46.099 | 46.136 | 46.174 | 46.211 | 46.249 | 1120 |
| 830  | 34.501 | 34.542 | 34.582 | 34.623 | 34.664 | 34.704 | 34.745 | 34.786 | 34.826 | 34.867 | 34.908 | 830  | 1130 | 46.249 | 46.286 | 46.324 | 46.361 | 46.398 | 46.436 | 46.473 | 46.511 | 46.548 | 46.585 | 46.623 | 1130 |
| 840  | 34.908 | 34.948 | 34.989 | 35.029 | 35.070 | 35.110 | 35.151 | 35.192 | 35.232 | 35.273 | 35.313 | 840  | 1140 | 46.623 | 46.660 | 46.697 | 46.735 | 46.772 | 46.809 | 46.847 | 46.884 | 46.921 | 46.958 | 46.995 | 1140 |
| 850  | 35.313 | 35.354 | 35.394 | 35.435 | 35.475 | 35.516 | 35.556 | 35.596 | 35.637 | 35.677 | 35.718 | 850  | 1150 | 46.995 | 47.033 | 47.070 | 47.107 | 47.144 | 47.181 | 47.218 | 47.256 | 47.293 | 47.330 | 47.367 | 1150 |
| 860  | 35.718 | 35.758 | 35.798 | 35.839 | 35.879 | 35.920 | 35.960 | 36.000 | 36.041 | 36.081 | 36.121 | 860  | 1160 | 47.367 | 47.404 | 47.441 | 47.478 | 47.515 | 47.552 | 47.589 | 47.626 | 47.663 | 47.700 | 47.737 | 1160 |
| 870  | 36.121 | 36.162 | 36.202 | 36.242 | 36.282 | 36.323 | 36.363 | 36.403 | 36.443 | 36.484 | 36.524 | 870  | 1170 | 47.737 | 47.774 | 47.811 | 47.848 | 47.884 | 47.921 | 47.958 | 47.995 | 48.032 | 48.069 | 48.105 | 1170 |
| 880  | 36.524 | 36.564 | 36.604 | 36.644 | 36.685 | 36.725 | 36.765 | 36.805 | 36.845 | 36.885 | 36.925 | 880  | 1180 | 48.105 | 48.142 | 48.179 | 48.216 | 48.252 | 48.289 | 48.326 | 48.363 | 48.399 | 48.436 | 48.473 | 1180 |
| 890  | 36.925 | 36.965 | 37.006 | 37.046 | 37.086 | 37.126 | 37.166 | 37.206 | 37.246 | 37.286 | 37.326 | 890  | 1190 | 48.473 | 48.509 | 48.546 | 48.582 | 48.619 | 48.656 | 48.692 | 48.729 | 48.765 | 48.802 | 48.838 | 1190 |
| 900  | 37.326 | 37.366 | 37.406 | 37.446 | 37.486 | 37.526 | 37.566 | 37.606 | 37.646 | 37.686 | 37.725 | 900  | 1200 | 48.838 | 48.875 | 48.911 | 48.948 | 48.984 | 49.021 | 49.057 | 49.093 | 49.130 | 49.166 | 49.202 | 1200 |
| 910  | 37.725 | 37.765 | 37.805 | 37.845 | 37.885 | 37.925 | 37.965 | 38.005 | 38.044 | 38.084 | 38.124 | 910  | 1210 | 49.202 | 49.239 | 49.275 | 49.311 | 49.348 | 49.384 | 49.420 | 49.456 | 49.493 | 49.529 | 49.565 | 1210 |
| 920  | 38.124 | 38.164 | 38.204 | 38.243 | 38.283 | 38.323 | 38.363 | 38.402 | 38.442 | 38.482 | 38.522 | 920  | 1220 | 49.565 | 49.601 | 49.637 | 49.674 | 49.710 | 49.746 | 49.782 | 49.818 | 49.854 | 49.890 | 49.926 | 1220 |
| 930  | 38.522 | 38.561 | 38.601 | 38.641 | 38.680 | 38.720 | 38.760 | 38.799 | 38.839 | 38.878 | 38.918 | 930  | 1230 | 49.926 | 49.962 | 49.998 | 50.034 | 50.070 | 50.106 | 50.142 | 50.178 | 50.214 | 50.250 | 50.286 | 1230 |
| 940  | 38.918 | 38.958 | 38.997 | 39.037 | 39.076 | 39.116 | 39.155 | 39.195 | 39.235 | 39.274 | 39.314 | 940  | 1240 | 50.286 | 50.322 | 50.358 | 50.393 | 50.429 | 50.465 | 50.501 | 50.537 | 50.572 | 50.608 | 50.644 | 1240 |
| 950  | 39.314 | 39.353 | 39.393 | 39.432 | 39.471 | 39.511 | 39.550 | 39.590 | 39.629 | 39.669 | 39.708 | 950  | 1250 | 50.644 | 50.680 | 50.715 | 50.751 | 50.787 | 50.822 | 50.858 | 50.894 | 50.929 | 50.965 | 51.000 | 1250 |
| 960  | 39.708 | 39.747 | 39.787 | 39.826 | 39.866 | 39.905 | 39.944 | 39.984 | 40.023 | 40.062 | 40.101 | 960  | 1260 | 51.000 | 51.036 | 51.071 | 51.107 | 51.142 | 51.178 | 51.213 | 51.249 | 51.284 | 51.320 | 51.355 | 1260 |
| 970  | 40.101 | 40.141 | 40.180 | 40.219 | 40.259 | 40.298 | 40.337 | 40.376 | 40.415 | 40.455 | 40.494 | 970  | 1270 | 51.355 | 51.391 | 51.426 | 51.461 | 51.497 | 51.532 | 51.567 | 51.603 | 51.638 | 51.673 | 51.708 | 1270 |
| 980  | 40.494 | 40.533 | 40.572 | 40.611 | 40.651 | 40.690 | 40.729 | 40.768 | 40.807 | 40.846 | 40.885 | 980  | 1280 | 51.708 | 51.744 | 51.779 | 51.814 | 51.849 | 51.885 | 51.920 | 51.955 | 51.990 | 52.025 | 52.060 | 1280 |
| 990  | 40.885 | 40.924 | 40.963 | 41.002 | 41.042 | 41.081 | 41.120 | 41.159 | 41.198 | 41.237 | 41.276 | 990  | 1290 | 52.060 | 52.095 | 52.130 | 52.165 | 52.200 | 52.235 | 52.270 | 52.305 | 52.340 | 52.375 | 52.410 | 1290 |
| 1000 | 41.276 | 41.315 | 41.354 | 41.393 | 41.431 | 41.470 | 41.509 | 41.548 | 41.587 | 41.626 | 41.665 | 1000 | 1300 | 52.410 | 52.445 | 52.480 | 52.515 | 52.550 | 52.585 | 52.620 | 52.654 | 52.689 | 52.724 | 52.759 | 1300 |
| 1010 | 41.665 | 41.704 | 41.743 | 41.781 | 41.820 | 41.859 | 41.898 | 41.937 | 41.976 | 42.014 | 42.053 | 1010 | 1310 | 52.759 | 52.794 | 52.828 | 52.863 | 52.898 | 52.932 | 52.967 | 53.002 | 53.037 | 53.071 | 53.106 | 1310 |
| 1020 | 42.053 | 42.092 | 42.131 | 42.169 | 42.208 | 42.247 | 42.286 | 42.324 | 42.363 | 42.402 | 42.440 | 1020 | 1320 | 53.106 | 53.140 | 53.175 | 53.210 | 53.244 | 53.279 | 53.313 | 53.348 | 53.382 | 53.417 | 53.451 | 1320 |
| 1030 | 42.440 | 42.479 | 42.518 | 42.556 | 42.595 | 42.633 | 42.672 | 42.711 | 42.749 | 42.788 | 42.826 | 1030 | 1330 | 53.451 | 53.486 | 53.520 | 53.555 | 53.589 | 53.623 | 53.658 | 53.692 | 53.727 | 53.761 | 53.795 | 1330 |
| 1040 | 42.826 | 42.865 | 42.903 | 42.942 | 42.980 | 43.019 | 43.057 | 43.096 | 43.134 | 43.173 | 43.211 | 1040 | 1340 | 53.795 | 53.830 | 53.864 | 53.898 | 53.932 | 53.967 | 54.001 | 54.035 | 54.069 | 54.104 | 54.138 | 1340 |
| 1050 | 43.211 | 43.250 | 43.288 | 43.327 | 43.365 | 43.403 | 43.442 | 43.480 | 43.518 | 43.557 | 43.595 | 1050 | 1350 | 54.138 | 54.172 | 54.206 | 54.240 | 54.274 | 54.308 | 54.343 | 54.377 | 54.411 | 54.445 | 54.479 | 1350 |
| 1060 | 43.595 | 43.633 | 43.672 | 43.710 | 43.748 | 43.787 | 43.825 | 43.863 | 43.901 | 43.940 | 43.978 | 1060 | 1360 | 54.479 | 54.513 | 54.547 | 54.581 | 54.615 | 54.649 | 54.683 | 54.717 | 54.751 | 54.785 | 54.819 | 1360 |
| 1070 | 43.978 | 44.016 | 44.054 | 44.092 | 44.130 | 44.169 | 44.207 | 44.245 | 44.283 | 44.321 | 44.359 | 1070 | 1370 | 54.819 | 54.852 | 54.886 |        |        |        |        |        |        |        |        | 1370 |
| 1080 | 44.359 | 44.397 | 44.435 | 44.473 | 44.512 | 44.550 | 44.588 | 44.626 | 44.664 | 44.702 | 44.740 | 1080 |      |        |        |        |        |        |        |        |        |        |        |        |      |
| 1090 | 44.740 | 44.778 | 44.816 | 44.853 | 44.891 | 44.929 | 44.967 | 45.005 | 45.043 | 45.081 | 45.119 | 1090 |      |        |        |        |        |        |        |        |        |        |        |        |      |
| °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   |