

**TERMOPAR TIPO K ( NIQUEL-CROMO/  
NIQUEL-MANGANÊS-SILÍCIO-ALUMÍNIO)**

Norma NBR 13773 Temperatura em graus celsius (ITS-90)  
Força eletromotriz térmica em milivolts

| °C   | 0     | -1    | -2    | -3    | -4    | -5    | -6    | -7    | -8    | -9    |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| -280 | -6441 | -6444 | -6446 | -6448 | -6450 | -6452 | -6453 | -6455 | -6458 | -6457 |
| -240 | -6344 | -6351 | -6358 | -6364 | -6370 | -6377 | -6382 | -6388 | -6393 | -6399 |
| -220 | -615  | -6170 | -6181 | -6192 | -6202 | -6213 | -6223 | -6233 | -6243 | -6252 |
| -200 | -5891 | -5907 | -5922 | -5938 | -5951 | -5965 | -5980 | -5994 | -6007 | -6021 |
| -180 | -5550 | -5569 | -5588 | -5608 | -5624 | -5642 | -5660 | -5678 | -5696 | -5713 |
| -160 | -5141 | -5183 | -5185 | -5207 | -5228 | -5250 | -5271 | -5292 | -5313 | -5333 |
| -140 | -4699 | -4694 | -4719 | -4744 | -4768 | -4793 | -4817 | -4841 | -4865 | -4889 |
| -120 | -4138 | -4166 | -4194 | -4221 | -4249 | -4276 | -4303 | -4330 | -4357 | -4384 |
| -100 | -3554 | -3584 | -3614 | -3637 | -3675 | -3705 | -3734 | -3764 | -3794 | -3823 |
| -80  | -2920 | -2953 | -2986 | -2688 | -3050 | -3083 | -3115 | -3147 | -3178 | -3211 |
| -60  | -2243 | -2278 | -2312 | -247  | -2382 | -2418 | -2450 | -2485 | -2519 | -2553 |
| -40  | -1527 | -1564 | -1600 | -1637 | -1673 | -1709 | -1745 | -1782 | -1818 | -1854 |
| -20  | -778  | -816  | -854  | -892  | -930  | -968  | -1006 | -1043 | -1081 | -1119 |
| 0    | 0     | -39   | -79   | -118  | -157  | -197  | -238  | -275  | -314  | -353  |
| °C   | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     |
| 0    | 0     | 39    | 79    | 119   | 158   | 198   | 238   | 277   | 317   | 357   |
| 20   | 798   | 838   | 879   | 919   | 960   | 1000  | 1041  | 1081  | 1122  | 1163  |
| 40   | 1612  | 1653  | 1694  | 1735  | 1776  | 1817  | 1858  | 1899  | 1941  | 1982  |
| 60   | 2436  | 2478  | 2519  | 2561  | 2602  | 2644  | 2685  | 2727  | 2768  | 2810  |
| 80   | 3267  | 3723  | 3350  | 3391  | 3433  | 3474  | 3516  | 3557  | 3598  | 3640  |
| 100  | 4096  | 4138  | 4179  | 4220  | 4262  | 4303  | 4344  | 4385  | 4427  | 4468  |
| 120  | 4920  | 4961  | 5002  | 5043  | 5084  | 5124  | 5165  | 5206  | 5247  | 5288  |
| 140  | 5735  | 5775  | 5815  | 5856  | 5896  | 5937  | 5977  | 6017  | 6058  | 6098  |
| 160  | 6540  | 6580  | 6620  | 6660  | 6701  | 6741  | 6781  | 6821  | 6861  | 6901  |
| 180  | 7340  | 7380  | 7420  | 7460  | 7500  | 7540  | 7579  | 7618  | 7658  | 7698  |
| 200  | 8138  | 8178  | 8218  | 8258  | 8298  | 83383 | 8378  | 8418  | 8458  | 8499  |
| 220  | 8940  | 8980  | 9020  | 9061  | 9101  | 9141  | 9181  | 9222  | 9262  | 9302  |
| 240  | 9747  | 9788  | 9828  | 9869  | 9909  | 9950  | 9991  | 10031 | 10072 | 10113 |
| 260  | 10561 | 10602 | 10643 | 10684 | 10725 | 10766 | 10807 | 10848 | 10889 | 10930 |
| 280  | 11382 | 11423 | 11467 | 11508 | 11547 | 11588 | 11630 | 11671 | 11712 | 11753 |
| 300  | 12209 | 12250 | 12291 | 12333 | 12374 | 12416 | 12457 | 12499 | 12540 | 12582 |
| 320  | 1304  | 13081 | 13123 | 13165 | 13206 | 13248 | 13290 | 13331 | 13373 | 13415 |
| 340  | 13874 | 13916 | 13958 | 14000 | 14042 | 14084 | 14126 | 14167 | 14209 | 14251 |
| 360  | 14713 | 14755 | 14797 | 14839 | 14881 | 14923 | 14965 | 15007 | 15049 | 15091 |
| 380  | 15554 | 15596 | 15638 | 15680 | 15722 | 15764 | 15806 | 15848 | 15891 | 15933 |
| 400  | 16397 | 16439 | 16482 | 16524 | 16566 | 16608 | 16651 | 16693 | 16735 | 16778 |
| 420  | 17243 | 17285 | 17328 | 17370 | 17413 | 17455 | 17497 | 17540 | 17582 | 17624 |
| 440  | 18091 | 18134 | 18176 | 18218 | 18261 | 18303 | 18346 | 18388 | 18431 | 18473 |
| 460  | 18941 | 18983 | 19026 | 19068 | 19111 | 19154 | 19196 | 19239 | 19281 | 19324 |
| 480  | 19792 | 19835 | 19877 | 19920 | 19962 | 20005 | 20048 | 20090 | 20133 | 20175 |
| 500  | 20644 | 20687 | 20730 | 20772 | 20815 | 20857 | 20900 | 20943 | 20985 | 21028 |
| 520  | 21497 | 21540 | 21582 | 21625 | 21668 | 21710 | 21753 | 21796 | 21838 | 21881 |
| 540  | 22350 | 22393 | 22435 | 22478 | 22521 | 22563 | 22606 | 22649 | 22691 | 22734 |
| 560  | 23203 | 23246 | 23288 | 23331 | 23373 | 23416 | 23458 | 23501 | 23544 | 23586 |
| 580  | 24055 | 24098 | 24140 | 24182 | 24225 | 24267 | 24310 | 24353 | 24395 | 24438 |
| 600  | 24905 | 24948 | 24990 | 25033 | 25075 | 25118 | 25160 | 25203 | 25245 | 25288 |
| 620  | 25755 | 25797 | 25840 | 25882 | 25924 | 25967 | 26009 | 26052 | 26094 | 26136 |
| 640  | 26602 | 26644 | 26687 | 26729 | 26771 | 26814 | 26856 | 26898 | 26940 | 26983 |
| 660  | 27447 | 27489 | 27531 | 27574 | 27616 | 27658 | 27700 | 27742 | 27784 | 27826 |
| 680  | 28289 | 28332 | 28374 | 28416 | 28458 | 28500 | 28542 | 28584 | 28626 | 28668 |
| 700  | 29129 | 29171 | 29213 | 29255 | 29297 | 29338 | 29380 | 29422 | 29464 | 29506 |
| 720  | 29966 | 30008 | 30049 | 30090 | 30132 | 30174 | 30216 | 30258 | 30299 | 30341 |
| 740  | 30798 | 30840 | 30881 | 30923 | 30964 | 31006 | 31047 | 31089 | 31130 | 31172 |
| 760  | 31628 | 31669 | 31710 | 31752 | 31793 | 31834 | 31876 | 31917 | 31958 | 32000 |
| 780  | 32453 | 32495 | 32536 | 32577 | 32618 | 32659 | 32700 | 32742 | 32783 | 32824 |
| 800  | 33275 | 33316 | 33357 | 33398 | 33439 | 33480 | 33521 | 33562 | 33603 | 33644 |
| 820  | 34093 | 34134 | 34175 | 34216 | 34257 | 34297 | 34338 | 34379 | 34420 | 34460 |
| 840  | 34908 | 34949 | 34989 | 35029 | 35070 | 35110 | 35151 | 35192 | 35232 | 35273 |
| 860  | 35718 | 35759 | 35798 | 35839 | 35879 | 35920 | 35960 | 36000 | 36041 | 36081 |
| 880  | 36524 | 36564 | 36604 | 36644 | 36685 | 36725 | 36765 | 36805 | 36845 | 36885 |
| 900  | 37326 | 37366 | 37406 | 37446 | 37486 | 37526 | 37566 | 37606 | 37646 | 37686 |
| 920  | 38124 | 38164 | 38204 | 38243 | 38283 | 38323 | 38363 | 38402 | 38442 | 38482 |
| 940  | 38918 | 38958 | 38997 | 39037 | 39076 | 39116 | 39155 | 39195 | 39235 | 39274 |
| 960  | 39708 | 39747 | 39787 | 39826 | 39866 | 39905 | 39944 | 39984 | 40023 | 40062 |
| 980  | 40494 | 40533 | 40572 | 40611 | 40651 | 40690 | 40729 | 40768 | 40807 | 40846 |
| 1000 | 41276 | 41315 | 41354 | 41393 | 41431 | 41470 | 41509 | 41548 | 41587 | 41626 |
| 1020 | 42053 | 42092 | 42131 | 42169 | 42208 | 42247 | 42286 | 42324 | 42363 | 42402 |
| 1040 | 42826 | 42865 | 42903 | 42942 | 42980 | 43019 | 43057 | 43096 | 43134 | 43173 |
| 1060 | 43595 | 43633 | 43672 | 43710 | 43748 | 43787 | 43825 | 43863 | 43901 | 43940 |
| 1080 | 44359 | 44397 | 44435 | 44473 | 44512 | 44550 | 44588 | 44626 | 44664 | 44702 |
| 1100 | 45119 | 45157 | 45194 | 45232 | 45270 | 45308 | 45346 | 45383 | 45421 | 45459 |
| 1120 | 45873 | 45911 | 45948 | 45986 | 46024 | 46061 | 46099 | 46136 | 46174 | 46211 |
| 1140 | 46626 | 46660 | 46697 | 46735 | 46772 | 46809 | 46847 | 46884 | 46921 | 46958 |
| 1160 | 47387 | 47424 | 47461 | 47498 | 47535 | 47572 | 47609 | 47646 | 47683 | 47720 |
| 1180 | 48145 | 48182 | 48219 | 48256 | 48292 | 48329 | 48366 | 48402 | 48439 | 48476 |
| 1200 | 48898 | 48935 | 48971 | 49008 | 49044 | 49081 | 49117 | 49153 | 49189 | 49226 |
| 1220 | 49646 | 49683 | 49719 | 49756 | 49792 | 49829 | 49865 | 49901 | 49937 | 49974 |
| 1240 | 50386 | 50422 | 50458 | 50493 | 50529 | 50565 | 50601 | 50637 | 50672 | 50708 |
| 1260 | 51120 | 51156 | 51191 | 51227 | 51262 | 51298 | 51333 | 51368 | 51403 | 51439 |
| 1280 | 51758 | 51794 | 51829 | 51864 | 51899 | 51934 | 51969 | 52004 | 52039 | 52074 |
| 1300 | 52400 | 52435 | 52470 | 52505 | 52540 | 52575 | 52610 | 52645 | 52680 | 52715 |
| 1320 | 53046 | 53081 | 53116 | 53151 | 53186 | 53221 | 53256 | 53291 | 53326 | 53361 |
| 1340 | 53705 | 53740 | 53775 | 53810 | 53845 | 53880 | 53915 | 53950 | 53985 | 54020 |
| 1360 | 54479 | 54513 | 54547 | 54581 | 54615 | 54649 | 54683 | 54717 | 54751 | 54785 |