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CN5 Copper Nickel Resistance Wire Type 5  
**電気抵抗用 CN5 (CuNi2)**  
**(銅ニッケル抵抗線 5種)**

# 電気抵抗用 銅ニッケル抵抗線 5種 (CuNi2)

記号: CN5 (銅ニッケル抵抗線 5種)

[JIS C 2532]

電気用銅材と同等以上の耐熱、耐酸化性がある。200℃まで使用できる。  
非磁性で 加工性は電気用銅材より良好である。  
ロードヒーター、床用ヒーター、電気用ヒューズなどに使用される。

| JIS記号 | JISコード | 体積抵抗率<br>[ $\mu\Omega\text{m}$ ] | 抵抗温度係数<br>[ $\times 10^{-6}/^{\circ}\text{C}$ ] |
|-------|--------|----------------------------------|---|
| GCN5  | C 2532 | 0.05 $\pm$ 0.0075                | * 1300  |

注(\*)参考値

| 熱膨張係数<br>$\times 10^{-6}/$ | 密度<br>g/cm <sup>3</sup><br>(20℃) | 融点<br>℃ | 最高使用温度<br>℃ |
|----------------------------|----------------------------------|---------|-------------|
| 17.5                       | 8.90                             | 1080    | 200         |

| 化学成分 | Mn         | Ni    | Cu+Ni+Mn  |
|------|------------|-------|-----------|
| (%)  | $\leq 1.0$ | 0.5~3 | $\geq 99$ |

| 記号   | 種類    | 範囲 (mm)               |                     |
|------|-------|-----------------------|---------------------|
| CN5W | 線     | $\phi 6.00 \sim 0.06$ |                     |
| CN5R | 帯     | t=2.90~0.05           | w=40~0.4 (厚さにより異なる) |
| CN5P | 板     | お問い合わせ下さい             |                     |
| CN5  | コイル・箔 | お問い合わせ下さい             |                     |

# CN5W【導体抵抗・長さ・重量】

丸線

体積抵抗率(23°C $\mu\Omega\text{m}$ )0.05 $\pm$ 0.0075

| 線径<br>(mm) | 線径許容差<br>(mm) | 断面積<br>(mm <sup>2</sup> ) | 導体抵抗<br>許容差(%) | 導体抵抗<br>( $\Omega$ /m) | 長さ<br>(m/Kg) | 重量<br>(g/m) |
|------------|---------------|---------------------------|----------------|------------------------|--------------|-------------|
| 6.00       | $\pm$ 0.080   | 28.27                     | $\pm$ 5        | 0.00177                | 3.97         | 252         |
| 5.50       | $\pm$ 0.080   | 23.76                     | $\pm$ 5        | 0.00210                | 4.73         | 211         |
| 5.00       | $\pm$ 0.080   | 19.64                     | $\pm$ 5        | 0.00255                | 5.72         | 175         |
| 4.50       | $\pm$ 0.080   | 15.90                     | $\pm$ 5        | 0.00314                | 7.06         | 142         |
| 4.00       | $\pm$ 0.080   | 12.57                     | $\pm$ 5        | 0.00398                | 8.94         | 112         |
| 3.50       | $\pm$ 0.080   | 9.621                     | $\pm$ 5        | 0.00520                | 11.7         | 85.6        |
| 3.20       | $\pm$ 0.060   | 8.042                     | $\pm$ 5        | 0.00622                | 14.0         | 71.6        |
| 2.90       | $\pm$ 0.060   | 6.605                     | $\pm$ 5        | 0.00757                | 17.0         | 58.8        |
| 2.60       | $\pm$ 0.060   | 5.309                     | $\pm$ 5        | 0.00942                | 21.2         | 47.3        |
| 2.30       | $\pm$ 0.050   | 4.155                     | $\pm$ 5        | 0.0120                 | 27.0         | 37.0        |
| 2.00       | $\pm$ 0.050   | 3.142                     | $\pm$ 5        | 0.0159                 | 35.8         | 28.0        |
| 1.80       | $\pm$ 0.050   | 2.545                     | $\pm$ 5        | 0.0196                 | 44.2         | 22.6        |
| 1.60       | $\pm$ 0.040   | 2.011                     | $\pm$ 5        | 0.0249                 | 55.9         | 17.9        |
| 1.50       | $\pm$ 0.040   | 1.767                     | $\pm$ 5        | 0.0283                 | 63.6         | 15.7        |
| 1.40       | $\pm$ 0.040   | 1.539                     | $\pm$ 5        | 0.0325                 | 73.0         | 13.7        |
| 1.30       | $\pm$ 0.040   | 1.327                     | $\pm$ 5        | 0.0377                 | 84.7         | 11.8        |
| 1.20       | $\pm$ 0.040   | 1.131                     | $\pm$ 5        | 0.0442                 | 99.3         | 10.1        |
| 1.10       | $\pm$ 0.030   | 0.9503                    | $\pm$ 6        | 0.0526                 | 118          | 8.46        |
| 1.00       | $\pm$ 0.030   | 0.7854                    | $\pm$ 6        | 0.0637                 | 143          | 6.99        |
| 0.90       | $\pm$ 0.030   | 0.6362                    | $\pm$ 6        | 0.0786                 | 177          | 5.66        |
| 0.85       | $\pm$ 0.030   | 0.5675                    | $\pm$ 6        | 0.0881                 | 198          | 5.05        |
| 0.80       | $\pm$ 0.030   | 0.5027                    | $\pm$ 6        | 0.0995                 | 224          | 4.47        |
| 0.75       | $\pm$ 0.025   | 0.4418                    | $\pm$ 6        | 0.113                  | 254          | 3.93        |
| 0.70       | $\pm$ 0.025   | 0.3848                    | $\pm$ 6        | 0.130                  | 292          | 3.43        |
| 0.65       | $\pm$ 0.025   | 0.3318                    | $\pm$ 6        | 0.151                  | 339          | 2.95        |
| 0.60       | $\pm$ 0.025   | 0.2827                    | $\pm$ 6        | 0.177                  | 397          | 2.52        |
| 0.55       | $\pm$ 0.020   | 0.2376                    | $\pm$ 7        | 0.210                  | 473          | 2.11        |
| 0.50       | $\pm$ 0.020   | 0.1964                    | $\pm$ 7        | 0.255                  | 572          | 1.75        |
| 0.45       | $\pm$ 0.020   | 0.1590                    | $\pm$ 7        | 0.314                  | 706          | 1.42        |
| 0.40       | $\pm$ 0.015   | 0.1257                    | $\pm$ 7        | 0.398                  | 894          | 1.12        |
| 0.35       | $\pm$ 0.015   | 0.09621                   | $\pm$ 7        | 0.520                  | 1168         | 0.856       |
| 0.32       | $\pm$ 0.015   | 0.08042                   | $\pm$ 7        | 0.622                  | 1397         | 0.716       |
| 0.29       | $\pm$ 0.012   | 0.06605                   | $\pm$ 7        | 0.757                  | 1701         | 0.588       |
| 0.26       | $\pm$ 0.012   | 0.05309                   | $\pm$ 8        | 0.942                  | 2116         | 0.473       |
| 0.23       | $\pm$ 0.012   | 0.04155                   | $\pm$ 8        | 1.20                   | 2704         | 0.370       |
| 0.20       | $\pm$ 0.010   | 0.03142                   | $\pm$ 8        | 1.59                   | 3577         | 0.280       |
| 0.18       | $\pm$ 0.010   | 0.02545                   | $\pm$ 8        | 1.96                   | 4415         | 0.226       |
| 0.16       | $\pm$ 0.010   | 0.02011                   | $\pm$ 8        | 2.49                   | 5588         | 0.179       |
| 0.15       | $\pm$ 0.008   | 0.01767                   | $\pm$ 8        | 2.83                   | 6358         | 0.157       |
| 0.14       | $\pm$ 0.008   | 0.01539                   | $\pm$ 8        | 3.25                   | 7299         | 0.137       |
| 0.13       | $\pm$ 0.008   | 0.01327                   | $\pm$ 9        | 3.77                   | 8465         | 0.118       |
| 0.12       | $\pm$ 0.008   | 0.01131                   | $\pm$ 9        | 4.42                   | 9935         | 0.101       |
| 0.11       | $\pm$ 0.006   | 0.009503                  | $\pm$ 9        | 5.26                   | 11823        | 0.0846      |
| 0.10       | $\pm$ 0.006   | 0.007854                  | $\pm$ 9        | 6.37                   | 14306        | 0.0699      |
| 0.09       | $\pm$ 0.005   | 0.006362                  | $\pm$ 10       | 7.86                   | 17662        | 0.0566      |
| 0.08       | $\pm$ 0.005   | 0.005027                  | $\pm$ 10       | 9.95                   | 22353        | 0.0447      |
| 0.07       | $\pm$ 0.005   | 0.003848                  | $\pm$ 10       | 13.0                   | 29196        | 0.0343      |
| 0.06       | $\pm$ 0.004   | 0.002827                  | $\pm$ 11       | 17.7                   | 39739        | 0.0252      |

# CN5W【温度電流特性 線径・温度・電流表】

丸線

体積抵抗率(23°CμΩm)0.05±0.0075

[単位:アンペア]

| 線径<br>(mm) | 50<br>(°C) | 100<br>(°C) | 150<br>(°C) | 200<br>(°C) | 250<br>(°C) | 300<br>(°C) | 350<br>(°C) | 400<br>(°C) |
|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 6.00       | 225        | 323         | 584         | 735         | 884         | 1039        | 1186        | 1352        |
| 5.50       | 202        | 371         | 514         | 647         | 777         | 914         | 1049        | 1196        |
| 5.00       | 174        | 321         | 446         | 563         | 675         | 794         | 909         | 1029        |
| 4.50       | 150        | 276         | 382         | 482         | 579         | 682         | 780         | 887         |
| 4.00       | 130        | 241         | 335         | 419         | 502         | 590         | 673         | 762         |
| 3.50       | 108        | 199         | 275         | 346         | 414         | 485         | 555         | 628         |
| 3.20       | 94.1       | 173         | 240         | 304         | 363         | 424         | 484         | 551         |
| 2.90       | 81.6       | 155         | 210         | 263         | 314         | 368         | 420         | 477         |
| 2.60       | 73.1       | 134         | 184         | 232         | 276         | 323         | 370         | 417         |
| 2.30       | 61.2       | 112         | 156         | 194         | 232         | 270         | 310         | 348         |
| 2.00       | 50.0       | 91.7        | 126         | 159         | 189         | 221         | 253         | 285         |
| 1.80       | 45.6       | 82.9        | 114         | 142         | 170         | 197         | 224         | 254         |
| 1.60       | 38.6       | 70.3        | 96.7        | 121         | 143         | 168         | 190         | 214         |
| 1.50       | 35.1       | 63.9        | 88.0        | 110         | 130         | 153         | 172         | 195         |
| 1.40       | 31.9       | 57.9        | 79.8        | 100         | 119         | 138         | 158         | 176         |
| 1.30       | 30.0       | 54.6        | 75.3        | 94.1        | 111         | 129         | 147         | 164         |
| 1.20       | 26.7       | 49.0        | 66.8        | 83.6        | 99.0        | 115         | 130         | 146         |
| 1.10       | 24.5       | 43.3        | 59.3        | 73.8        | 87.5        | 102         | 115         | 129         |
| 1.00       | 20.8       | 38.0        | 51.9        | 64.9        | 76.9        | 89.1        | 101         | 114         |
| 0.90       | 17.6       | 32.3        | 45.2        | 55.2        | 65.4        | 75.8        | 85.8        | 96.2        |
| 0.80       | 16.0       | 29.4        | 40.1        | 50.0        | 59.1        | 68.0        | 77.0        | 83.8        |
| 0.70       | 13.2       | 24.4        | 33.1        | 41.4        | 49.1        | 56.4        | 63.8        | 69.5        |
| 0.65       | 11.9       | 22.0        | 29.9        | 37.2        | 44.1        | 50.8        | 57.5        | 62.5        |
| 0.60       | 11.2       | 20.8        | 28.3        | 35.2        | 41.6        | 47.6        | 53.7        | 59.5        |
| 0.55       | 10.0       | 18.4        | 25.1        | 31.3        | 36.8        | 42.3        | 47.7        | 52.7        |
| 0.50       | 8.72       | 16.3        | 22.1        | 27.3        | 32.3        | 38.9        | 41.9        | 46.3        |
| 0.45       | 7.18       | 14.0        | 19.1        | 23.9        | 28.1        | 32.2        | 36.3        | 40.2        |
| 0.40       | 6.87       | 12.7        | 17.3        | 21.5        | 25.3        | 28.9        | 32.5        | 36.1        |
| 0.35       | 5.75       | 10.7        | 14.6        | 17.9        | 21.3        | 24.2        | 27.3        | 30.3        |
| 0.32       | 5.12       | 9.50        | 12.9        | 16.1        | 18.9        | 21.6        | 24.2        | 27.0        |
| 0.29       | 4.50       | 8.34        | 11.4        | 14.0        | 16.6        | 19.0        | 21.3        | 23.5        |
| 0.26       | 4.17       | 7.69        | 10.5        | 12.9        | 15.2        | 17.3        | 19.3        | 21.5        |
| 0.23       | 3.59       | 6.59        | 8.96        | 11.1        | 13.0        | 14.8        | 16.7        | 18.3        |
| 0.20       | 2.97       | 5.46        | 7.42        | 9.24        | 10.8        | 12.3        | 13.7        | 14.7        |
| 0.18       | 2.67       | 4.93        | 6.70        | 8.26        | 9.67        | 11.1        | 12.3        | 13.9        |
| 0.16       | 2.25       | 4.18        | 5.63        | 7.02        | 8.46        | 9.37        | 10.5        | 11.8        |
| 0.15       | 2.10       | 3.88        | 5.26        | 6.51        | 7.60        | 8.70        | 9.69        | 10.9        |
| 0.14       | 1.91       | 3.53        | 4.80        | 5.92        | 6.92        | 7.92        | 8.82        | 9.90        |
| 0.13       | 1.81       | 3.30        | 4.50        | 5.56        | 6.49        | 7.50        | 8.25        | 9.08        |
| 0.12       | 1.60       | 2.96        | 4.05        | 4.99        | 5.82        | 6.64        | 7.35        | 8.15        |
| 0.11       | 1.42       | 2.65        | 3.60        | 4.50        | 5.17        | 5.90        | 6.57        | 7.23        |
| 0.10       | 1.23       | 2.28        | 3.11        | 3.84        | 4.49        | 5.13        | 5.71        | 6.31        |
| 0.09       | 1.10       | 2.03        | 2.75        | 3.40        | 3.98        | 4.54        | 5.06        | 5.56        |
| 0.08       | 0.956      | 1.77        | 2.42        | 2.99        | 3.46        | 3.95        | 4.41        | 4.78        |
| 0.07       | 0.798      | 1.48        | 2.16        | 2.51        | 2.85        | 3.31        | 3.68        | 4.04        |
| 0.06       | 0.671      | 1.24        | 1.69        | 1.97        | 2.41        | 2.76        | 3.06        | 3.37        |
| 0.05       | 0.522      | 0.674       | 1.31        | 1.61        | 1.88        | 2.15        | 2.39        | 2.63        |
| 0.04       | 0.390      | 0.727       | 0.980       | 1.21        | 1.41        | 1.61        | 1.78        | 1.97        |
| 0.03       | 0.264      | 0.492       | 0.665       | 0.817       | 0.958       | 1.09        | 1.21        | 1.33        |
| 0.025      | 0.213      | 0.394       | 0.532       | 0.655       | 0.766       | 0.868       | 0.961       | 1.06        |

注(\*)参考値

# CN5R【導体抵抗】

帯

体積抵抗率(23°CμΩm)0.05±0.0075

[単位:Ω/m]

| 厚さ<br>(mm) | 幅(mm)   |         |         |         |         |         |         |         |         |        |        |        |       |       |
|------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|-------|-------|
|            | 40.0    | 32.0    | 25.0    | 20.0    | 16.0    | 13.0    | 10.0    | 6.5     | 5.0     | 3.2    | 2.4    | 1.6    | 0.8   | 0.4   |
| 2.90       | 0.00044 | 0.00055 | 0.00070 | 0.00088 | 0.00110 | 0.00135 | 0.00176 |         |         |        |        |        |       |       |
| 2.60       | 0.00049 | 0.00061 | 0.00078 | 0.00098 | 0.00123 | 0.00151 | 0.00196 | 0.00308 |         |        |        |        |       |       |
| 2.30       | 0.00055 | 0.00069 | 0.00089 | 0.00111 | 0.00139 | 0.00171 | 0.00222 | 0.00348 | 0.00453 |        |        |        |       |       |
| 2.00       | 0.00064 | 0.00080 | 0.00102 | 0.00128 | 0.00159 | 0.00196 | 0.00255 | 0.00401 | 0.00521 |        |        |        |       |       |
| 1.80       | 0.00071 | 0.00089 | 0.00113 | 0.00142 | 0.00177 | 0.00218 | 0.00283 | 0.00445 | 0.00579 |        |        |        |       |       |
| 1.60       | 0.00080 | 0.00100 | 0.00128 | 0.00159 | 0.00199 | 0.00245 | 0.00319 | 0.00501 | 0.00651 |        |        |        |       |       |
| 1.40       | 0.00091 | 0.00114 | 0.00146 | 0.00182 | 0.00228 | 0.00280 | 0.00364 | 0.00572 | 0.00744 |        |        |        |       |       |
| 1.20       | 0.00106 | 0.00133 | 0.00170 | 0.00213 | 0.00266 | 0.00327 | 0.00425 | 0.0067  | 0.00868 |        |        |        |       |       |
| 1.00       | 0.00128 | 0.00159 | 0.00204 | 0.00255 | 0.00319 | 0.00392 | 0.00510 | 0.0080  | 0.0104  |        |        |        |       |       |
| 0.90       |         | 0.00177 | 0.00227 | 0.00283 | 0.00354 | 0.00436 | 0.00567 | 0.0089  | 0.0116  | 0.0181 | 0.0241 |        |       |       |
| 0.80       |         | 0.00199 | 0.00255 | 0.00319 | 0.00399 | 0.00491 | 0.00638 | 0.0100  | 0.0130  | 0.0203 | 0.0271 |        |       |       |
| 0.70       |         |         | 0.00292 | 0.00364 | 0.00456 | 0.00561 | 0.00729 | 0.0114  | 0.0149  | 0.0233 | 0.0310 |        |       |       |
| 0.60       |         |         | 0.00340 | 0.00425 | 0.00531 | 0.00654 | 0.0085  | 0.0134  | 0.0174  | 0.0271 | 0.0362 |        |       |       |
| 0.50       |         |         | 0.00408 | 0.00510 | 0.00638 | 0.00785 | 0.0102  | 0.0160  | 0.0208  | 0.0326 | 0.0434 |        |       |       |
| 0.45       |         |         | 0.00454 | 0.00567 | 0.00709 | 0.00872 | 0.0113  | 0.0178  | 0.0231  | 0.0362 | 0.0482 | 0.0723 |       |       |
| 0.40       |         |         |         |         | 0.00797 | 0.00981 | 0.0128  | 0.0200  | 0.0260  | 0.0407 | 0.0543 | 0.0814 |       |       |
| 0.35       |         |         |         |         |         | 0.01120 | 0.0146  | 0.0229  | 0.0298  | 0.0465 | 0.0620 | 0.0930 |       |       |
| 0.32       |         |         |         |         |         | 0.01230 | 0.0159  | 0.0250  | 0.0326  | 0.0509 | 0.0678 | 0.102  |       |       |
| 0.29       |         |         |         |         |         |         | 0.0176  | 0.0276  | 0.0359  | 0.0561 | 0.0748 | 0.112  | 0.224 |       |
| 0.26       |         |         |         |         |         |         | 0.0196  | 0.0308  | 0.0401  | 0.0626 | 0.0835 | 0.125  | 0.250 | 0.501 |
| 0.23       |         |         |         |         |         |         |         | 0.0348  | 0.0453  | 0.0708 | 0.0944 | 0.142  | 0.283 | 0.566 |
| 0.20       |         |         |         |         |         |         |         | 0.0401  | 0.0521  | 0.0814 | 0.109  | 0.163  | 0.326 | 0.651 |
| 0.18       |         |         |         |         |         |         |         | 0.0445  | 0.0579  | 0.0904 | 0.121  | 0.181  | 0.362 | 0.723 |
| 0.16       |         |         |         |         |         |         |         |         |         | 0.102  | 0.136  | 0.203  | 0.407 | 0.814 |
| 0.14       |         |         |         |         |         |         |         |         |         | 0.116  | 0.155  | 0.233  | 0.465 | 0.930 |
| 0.12       |         |         |         |         |         |         |         |         |         |        | 0.181  | 0.271  | 0.543 | 1.09  |
| 0.10       |         |         |         |         |         |         |         |         |         |        |        | 0.326  | 0.651 | 1.30  |
| 0.08       |         |         |         |         |         |         |         |         |         |        |        | 0.407  | 0.814 | 1.63  |

※ 導体抵抗許容差:幅 10mm以上±7% 幅10mm未満±8%

## 電熱用合金の寸法並びに導体抵抗の許容差 ( JIS 標準値)

| 帯の厚さ<br>[mm]  | 帯の幅<br>[mm] | 導体抵抗許容差<br>[%] |
|---------------|-------------|----------------|
| 0.08以上 3.15以下 | 10未満        | ±8             |
|               | 10以上        | ±7             |

※標準(サイズ・許容差)以外も製造いたしますのでお問い合わせください。