

# Thermocouple Characteristics Table

| ANSI/<br>ASTM      | Symbol<br>Single | Generic<br>Names  | <i>Color</i> / <i>Coding</i>     |   | Magnetic<br>Yes/No | Environment<br>(Bare Wire)   |
|--------------------|------------------|---|----------------------------------|---|--------------------|--|
|                    |                  |   | Individual<br>Conductor          | Overall Jacket<br>Extension<br>Grade Wire |                    |  |
| <b>T</b>           | TP<br>TN         | Copper<br>Constantan, Nominal<br>Composition: 55% Cu, 45% Ni  | • Blue<br>• Red                  | • Blue                                    | X<br>X             | Mild Oxidizing,<br>Reducing.<br>Vacuum or Inert. Good<br>where moisture is<br>present.                               |
| <b>J</b>           | JP<br>JN         | Iron<br>Constantan, Nominal<br>Composition: 55% Cu, 45% Ni.   | • White<br>• Red                 | • Black                                   | X<br>X             | Reducing Vacuum,<br>Inert. Limited use<br>in oxidizing at High<br>Temperatures. Not<br>recommended for low<br>temps. |
| <b>E</b>           | EP<br>EN         | Chromel®, Nominal<br>Composition: 90% Ni, 10% Cr<br>Constantan, Nominal<br>Composition: 55% Cu, 45% Ni                      | • Purple<br>• Red                | • Purple                                  | X<br>X             | Oxidizing or Inert.<br>Limited use in Vacuum<br>or Reducing.   |
| <b>K</b>           | KP<br>KN         | Chromel, Nominal<br>Composition: 90% Ni, 10% Cr<br>Alumel, Nominal<br>Composition: 95% Ni, Mn, 2% Al                        | • Yellow<br>• Red                | • Yellow                                  | X<br>X             | Clean Oxidizing and<br>Inert. Limited used in<br>Vacuum or Reducing.   |
| <b>N</b>           | NP<br>NN         | Nicrosil®, Nominal<br>Compositions: 84.6% Ni, 14.2% Cr, 1.4% Si<br>Nisil®, Nominal<br>Composition: 95.5% Ni, 4.4% Si, 1% Mg | • Orange<br>• Red                | • Orange                                  | X<br>X             | Clean Oxidizing and<br>Inert. Limited use in<br>Vacuum or Reducing.  |
| <b>S</b>           | SP<br>SN         | Platinum 10% Rhodium<br>Pure Platinum   | • Black<br>• Red                 | • Green                                   | X<br>X             | Oxidizing or Inert<br>Atmospheres. Do<br>not insert in metal<br>tubes. Beware of<br>contamination.                   |
| <b>R</b>           | RP<br>RN         | Platinum 13% Rhodium<br>Pure Platinum   | • Black<br>• Red                 | • Green                                   | X<br>X             | Oxidizing or Inert<br>Atmospheres. Do<br>not insert in metal<br>tubes. Beware of<br>contamination.                   |
| <b>B</b>           | BP<br>BN         | Platinum 30% Rhodium<br>Platinum 6% Rhodium   | • Grey<br>• Red                  | • Grey                                    | X<br>X             | Oxidizing or Inert<br>Atmospheres. Do<br>not insert in metal<br>tubes. Beware of<br>contamination.                   |
| <b>W5*<br/>(C)</b> | P<br>N           | Tungsten 5% Rhenium<br>Tungsten 26% Rhenium   | • White/Red Trace<br>• Red       | • White/Red<br>Trace                      | X<br>X             | Vacuum, Inert,<br>Hydrogen<br>Atmospheres. Beware<br>of Embrittlement.   |
| <b>W3*<br/>(D)</b> | P<br>N           | Tungsten 3% Rhenium<br>Tungsten 25% Rhenium   | • White/Yellow<br>Trace<br>• Red | • White/<br>Yellow<br>Trace               | X<br>X             | Vacuum, Inert,<br>Hydrogen<br>Atmospheres. Beware<br>of Embrittlement.   |

\*Conax designated, not ANSI/ASTM. ©Chromel-Alumel is a registered trademark of Hoskins Manufacturing. ©Nicrosil and Nisil are registered trademarks of Harrison Alloys, Inc.



2300 Walden Avenue • Buffalo, New York 14225