

# Resistance Heating Wire

## Nickel-Chromium Alloy

### 80% Nickel/20% Chromium

- ✓ Withstands High Temperatures up to 1150°C (2100°F)
- ✓ Quick Heating, Long Life
- ✓ Corrosion Resistant
- ✓ Used to Make Straight or Helical Coil Resistance Heaters
- ✓ Convenient 15 m (50') and 60 m (200') Spools Available



Shown smaller than actual size.

OMEGA® NIC80 wire is a resistance heating wire comprised of 80% Nickel and 20% Chromium. NIC80 wire is commonly used as a resistor at elevated temperatures. NI/CR-80/20 is essential for resistor elements in high temperature applications such as electric furnaces, electric ranges and radiant heaters operating at temperatures up to 1150°C (2100°F).

In addition to these qualities and standard uses, it has found wide application in technical applications due to its combination of high electrical resistance and its temperature coefficient of resistance much less than that of Nickel-Chrome 60.

#### Specifications

**Composition:** 80% Ni, 20% Cr

**Specific Resistance:**

650  $\Omega$  per circular mil-foot at 20°C (68°F). See table below for multiplication factors to obtain resistance at other temperatures.

**Specific Gravity:** 8.41

**Density:** 0.304 lb/in<sup>3</sup>

**Melting Point:** Approx 1400°C (2550°F)

**Nominal Coefficient of Linear Expansion:** 0.000017 (10 to 1000°C)

**Tensile Strength (lb/in<sup>2</sup>) at 20°C (68°F):**

**Soft Annealed:** 100,000

**Nominal Temperature Coefficient of Resistance:**

0.00011  $\Omega/\Omega/^\circ\text{C}$  (20 to 500°C)

**Factor by Which Resistance at Room Temperature Is to Be Multiplied to Obtain Resistance at Indicated Temperatures**  
(These figures are given as a basis for engineering calculations and represent average material as supplied.)

| Temp °C | 20    | 93    | 204   | 315   | 427   | 538   | 649   | 760   | 871   | 982   | 1093°C |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Temp °F | 68    | 200   | 400   | 600   | 800   | 1000  | 1200  | 1400  | 1600  | 1800  | 2000°F |
| Factor  | 1.000 | 1.016 | 1.037 | 1.054 | 1.066 | 1.070 | 1.064 | 1.062 | 1.066 | 1.072 | 1.078  |

**To Order Visit [omega.com/ni80](http://omega.com/ni80) for Pricing and Details**

| AWG | Dia.<br>mm (1") | $\Omega$ per ft<br>@ 20°C (68°F) | Current Temperature Characteristics* °C (°F) |               |               |               |               |                | Model No.    |
|-----|-----------------|----------------------------------|----------------------------------------------|---------------|---------------|---------------|---------------|----------------|--------------|
|     |                 |                                  | 425<br>(800)                                 | 550<br>(1000) | 650<br>(1200) | 750<br>(1400) | 875<br>(1600) | 1100<br>(2000) |              |
| 18  | 1.0 (0.040)     | 0.4062                           | 8.32                                         | 10.17         | 12.48         | 15.11         | 18.06         | 24.03          | NI80-040-(†) |
| 20  | 0.81 (0.032)    | 0.6348                           | 6.17                                         | 7.56          | 9.24          | 11.13         | 13.23         | 17.57          | NI80-032-(†) |
| 22  | 0.64 (0.0253)   | 1.015                            | 4.62                                         | 5.62          | 6.85          | 8.20          | 9.69          | 12.85          | NI80-025-(†) |
| 24  | 0.51 (0.0201)   | 1.609                            | 3.46                                         | 4.18          | 5.06          | 6.04          | 7.10          | 9.40           | NI80-020-(†) |
| 26  | 0.40 (0.0159)   | 2.571                            | 2.62                                         | 3.12          | 3.76          | 4.49          | 5.27          | 6.90           | NI80-015-(†) |
| 28  | 0.32 (0.0126)   | 4.094                            | 1.98                                         | 2.38          | 2.84          | 3.37          | 3.93          | 5.09           | NI80-012-(†) |
| 30  | 0.25 (0.010)    | 6.50                             | 1.50                                         | 1.81          | 2.14          | 2.53          | 2.93          | 3.75           | NI80-010-(†) |

\* Showing approximate amperes necessary to produce a given temperature, applying only to a straight wire stretched horizontally in free air.

† Specify desired length in feet: "50" or "200". **Note:** This wire is **not** intended for use in making thermocouple elements.

**Ordering Example:** NI80-032-50 is a 15 m (50') spool of 20 gage bare wire.

**Note:** Published prices are based on market value at time of printing and are subject to change due to Nickel surcharges, Chromium and precious-metal market fluctuations.