# Copper-Nickel Alloys: CuNi44

Wire • Bar • Strip • Ribbon

**CuNi44** offers high electrical resistivity and very low temperature coefficient of resistance (TCR). Due to its low TCR, it finds use in wire-wound precision resistors that can operate up to 400°C (750°F). This alloy is also capable of developing a high and constant electromotive force when coupled with copper. This property allows it to be used for thermocouple, thermocouple extension and compensating leads. It is easily soldered, welded, and offers good corrosion resistance against atmospheric conditions.

| Specifications | | | |
|---|---|---|---|
| **Alloy** | Werkstoff Nr | UNS designation | DIN |
| **CuNi44** | 2.0842 | C72150 | 17644 |

| Nominal Chemical Composition (%) | | | | |
|---|---|---|---|---|
| **Alloy** | Ni | Mn | Fe | Cu |
| **CuNi44** | Min 43.0 | Max 1.0 | Max 1.0 | Balance |

| Physical Properties (at room temperature) | | | | | |
|---|---|---|---|---|---|
| **Alloy** | Density $g/cm^3$ | Specific Resistance (Electrical Resistivity) $\mu\Omega$-cm | Thermal Linear Expansion Coeff. b/w 20-100° C $10^{-6}/^{\circ}C$ | Temp Coeff of Resistance b/w 20-100 °C ppm/°C | Maximum Operating Temp of Element °C |
| **CuNi44** | 8.90 | 49.0 | 14.0 | Standard ±60 | 600 |
| | | | | Special ±20 | |

| Mechanical Properties (for cold drawn & annealed wire) | | | | |
|---|---|---|---|---|
| **Alloy** | Tensile strength $N/mm^2$ | | Elongation % at $L_0 = 100$ mm | |
| | Min | Max | Min | Max |
| **CuNi44** | 420 | 520 | 15 | 35 |

| Size Range | | | |
|---|---|---|---|
| **Form** | Dia (mm) | Width (mm) | Thickness (mm) |
| **Wire** | 0.15-12.0 | - | - |
| **Strip** | - | 10-80 | ⩾ 0.10 |
| **Ribbon** | - | 2.0-4.5 | 0.2-4.0 |

### Applications

Typical applications for CuNi44 alloy include temperature stable potentiometers, industrial rheostats, electric motor starter resistances, volume control devices, to name a few. For thermocouple applications, it is coupled with copper, iron, and Ni-Cr to form Type T, Type J, and Type E thermocouples, respectively.

Other Grades of CuNi alloys are also available. Please contact us for more information.

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