

Copper-Nickel Alloys: Grades with Low Resistance

Wire • Bar • Strip • Ribbon

JLC Alloy 30, JLC Alloy 15, JLC Alloy 12, JLC Alloy 10 and JLC Alloy 5

These alloys are characterized by low electrical resistivity and low temperature coefficient of resistance. They provide good resistance against oxidation and chemical corrosion. They are easily soldered. Typical applications of these alloys are for electrical resistors and general resistance wire for heating wires, cables, and mats. They are also used as resistance elements of heaters for electrical circuit breakers/fuses in heating cables with low temperatures. In ribbon form, they are used for heating bimetals.

| Specifications & Nominal Chemical Composition (%) | | | | |
|---|--------------|-------|----|---------|
| Alloy | Werkstoff Nr | DIN | Ni | Cu |
| JLC Alloy 30 | 2.0881 | - | 23 | Balance |
| JLC Alloy 15 | 2.0811 | 17471 | 11 | Balance |
| JLC Alloy 12 | - | - | 8 | Balance |
| JLC Alloy 10 | 2.0807 | 17471 | 6 | Balance |
| JLC Alloy 5 | 2.0802 | 17471 | 2 | Balance |

| Physical properties (at room temperature) | | | | | |
|---|------------------------------|---|--|---|---|
| Alloy | Density g/cm ³ | Specific Resistance (Electrical Resistivity) μΩ-cm | Thermal Linear Expansion Coeff. b/w 20-100°C 10 ⁻⁶ /°C | Temp Coeff of Resistance b/w 20-100°C ppm/°C | Maximum Operating temp of element °C |
| JLC Alloy 30 | 8.90 | 30 | 15.7 | 180 | 400 |
| JLC Alloy 15 | 8.90 | 15 | 16.0 | 350-450 | 400 |
| JLC Alloy 12 | 8.90 | 12 | 16.2 | 480 | 300 |
| JLC Alloy 10 | 8.90 | 10 | 16.2 | 500-900 | 300 |
| JLC Alloy 5 | 8.90 | 5 | 16.4 | 1000-1600 | 300 |

| Mechanical Properties (for cold drawn & annealed wire) | | | | |
|--|---------------------------------------|-----|--|-----|
| Alloy | Tensile strength N/mm ² | | Elongation % at L ₀ = 100 mm | |
| | Min | Max | Min | Max |
| JLC Alloy 30 | 340 | 690 | 15 | 35 |
| JLC Alloy 15 | 250 | 540 | 15 | 35 |
| JLC Alloy 12 | 250 | 540 | 15 | 35 |
| JLC Alloy 10 | 230 | 680 | 15 | 35 |
| JLC Alloy 5 | 220 | 440 | 15 | 35 |

Separate data sheet for CuNi44 is available