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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