Ualloy 049 (Constantan)

Common Name: CuNi45, NC50.Cuprothal, Alloy 294, Cuprothal 294, Nico, MWS-294, Cupron, Copel, Alloy 45, Neutrology, Advance, CuNi 102, Cu-Ni 44, Konstantan,constantan.

Ualloy049 is a copper-nickel alloy (Cu56Ni44 alloy) characterized by high electrical resistance, high ductility and good corrosion resistance. It is suitable for use at temperatures up to 400°C .

Typical applications for Ualloy49 are temperature-stable potentiometers, industrial rheostats and electric motor starter resistances.

The combination of negligible temperature coefficient and high resistivity makes the alloy particulary suitable for the winding of precision resistors.

Ualloy049 is manufactured from electrolytic copper and pure nickel. In finer wire sizes the alloy is designated as Ualloy49TC(Thermocouple).

Normal composition(%)

Nickel	45	Manganese	1
Copper	Bal.		

Typical Mechanical properties（1.0mm）

Yield strength	Tensile Strength	Elongation
Mpa	Mpa	%
250	420	25

TEL:+86-571-63255636 Email: sales@ualloy.com
FAX:+86-571-63256181 Web: www.ualloy.com
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Typical Physical properties

Density (g/cm^3)	8.9
Electrical resistivity at 20℃(Ωmm^2/m)	0.49
Temperature factor of resistivity（20℃~600℃）X10^{-5}/℃	-6
Conductivity coefficient at 20℃ (WmK)	23
EMF vs Cu(μV/℃)(0~100℃)	-43

Coefficient of thermal expansion	
Temperature	Coefficient of Thermal Expansion x10^{-6}/℃
20 ℃- 400℃	15

Specific heat capacity	
Temperature	J/gK
20℃	0.41

Melting point (℃)	1280
Max continuous operating temperature in air (℃)	400
Magnetic properties	non-magnetic

Corrosion resistance performance

Alloys	Working In atmosphere at 20℃	Working at max temperature 200℃				
		Air and oxygen contain gases	gases with Nitrogen	gases with sulfur oxidability	gases with sulfur reductibility	carburization
Ualloy049	good	good	good	good	bad	good

Style of supply

Alloys Name	Type	Dimension	
Ualloy049W	Wire	D= 0.03~8mm	
Ualloy049R	Ribbon	W= 0.4~40mm	T= 0.03~2.9mm
Ualloy049S	Strip	W= 8~200mm	T= 0.1~3.0
Ualloy049F	Foil	W= 6~120mm	T= 0.003~0.1
Ualloy049B	Bar	Dia= 8~100mm	L= 50~1000

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