

CUPROTHAL 49 STRIP

DATASHEET

Cuprothal 49 is an austenitic copper-nickel alloy (CuNi alloy) for use at temperatures up to 600°C (1110°F). The alloy is characterized by high electrical resistance, high ductility and good corrosion resistance.

In finer sizes the alloy's negligible temperature coefficient of resistance combined with its high resistivity makes it useful for the winding of precision resistors which must not change in resistance over a limited range in temperature. For this purpose the alloy is identified as Cuprothal 49 TC.

Other typical applications are:

- Temperature-stable potentiometers
- Industrial rheostats
- Electric motor starter resistances.

CHEMICAL COMPOSITION

	Ni %	Mn %	Fe %	Cu %
Nominal Composition	44.0	1.0	0.5	Bal.

MECHANICAL PROPERTIES

Thickness	Yield strength	Tensile strength	Elongation	Hardness
	R _{p0.2}	R _m	A	
mm	MPa	MPa	%	Hv
1	250	430	20	130

PHYSICAL PROPERTIES

Density g/cm ³	8.9
Electrical resistivity at 20°C Ω mm ² /m	0.49
Temperature coefficient of resistance K ⁻¹	± 20 ppm (wire < 0.30 mm)
	± 60 ppm (wire > 0.30 mm)

TEMPERATURE FACTOR OF RESISTIVITY

Temperature °C	100	200	300	400	500	600
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TEMPERATURE FACTOR OF RESISTIVITY

Temperature °C	100	200	300	400	500	600
Ct	1.002	1.002	1.001	1.005	1.017	1.037

COEFFICIENT OF THERMAL EXPANSION

Temperature °C	Thermal Expansion X10 ⁻⁶ /K
20-100	14

THERMAL CONDUCTIVITY

Temperature °C	
	20
W m ⁻¹ K ⁻¹	21.0

SPECIFIC HEAT CAPACITY

Temperature °C	
	20
kJ kg ⁻¹ K ⁻¹	0.410

Melting point °C	1280
Max continuous operating temperature in air °C	600
Magnetic properties	The material is non-magnetic

Disclaimer: Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice. This datasheet is only valid for Kanthal materials.