Niclal 42

Niclal 42 (Shunt Grade), CuMn12Ni4

Identification

VMI No.	38
UNS No.	n/a
Relevant Specifications	

Forms	Strip	Wire	Bar	Sheet
	*	*	*	*

Description

Niclal 42 is a precision resistance alloy, with moderate Resistivity, low Temperature coefficient of resistance and low thermal EMF versus Copper. With high stability of electrical resistance, good working properties and very good weldability, Niclal 42 is specially dedicated to precision resistors and electrical shunts.

Chemical Composition (%)

Copper	85 Nominal
Manganese	11 Nominal
Nickel	4 Nominal

Mechanical Properties (all values are for annealed temper; not intended for specification)

Tensile	55	ksi
	380	MPa
Yield	29	ksi
	200	MPa
Elongation	30	% in 2"
	30	% in 50mm
Hardness	50	HRB
	90	Hv

Physical Properties

Density	0.3165	lb/in³
	8.760	g/cm³
Resistivity (Nominal)	253	Ohm•circ mil/ft
	42	microOhm•cm

Coefficient of Thermal Expansion from 68°F (20°C) to	212°F	392°F	572°F	752°F	932°F
	100°C	200°C	300°C	400°C	500°C
(micro-in/in-°F)	-----	-----	-----	-----	-----
(micro-m/m-K)	-----	-----	-----	-----	-----

VISTA METALS

www.vismet.com
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Cu Mn11 Ni4

Brand Name	NICLAL 42	
Abbreviation	Cu - Mn - Ni	
Nominal analysis		
Cu %	Mn %	Ni %
Remain	11	4

DESCRIPTION

Niclal 42 is a precision resistance alloy, with moderate Resistivity, low Temperature coefficient of resistance and low thermal EMF versus Copper.

With high stability of electrical resistance, good working properties and very good weldability,
Niclal 42 is specially dedicated to precision resistors, electrical shunts which control and measure the current through devices such electricity meters or
DC ammeters.

Electrical Properties in annealed temper

Electrical Resistivity at 20 °C	**42 µohm x cm**
Temperature Coefficient of Electrical Resistance between -20 and +150 °C	**+/- 15 ppm/°C**
Thermo EMF against Copper at 20 °C	**- 0.98 µV/°C**

Physical Properties

Density at 20 °C	**8.76 g/cm³**
Thermal conductivity at 20 °C	**22 W/m x °K**
Coefficient of thermal expansion at 20 °C	**18 x 10^{-6} / °C**

Forms manufactured

Wire (annealed temper)	**diameter : 0.8 mm to 14 mm**
Rods (1/4 hard temper)	**diameter : 1 mm to 19 mm**
Strip	**thickness : 0.08 mm to 3.5 mm** **width : 3 mm to 380 mm**
Cut to length	**thickness : 0.25 mm to 3.5 mm** **width : 20 mm to 380 mm** **length : 500 mm to 3500 mm**