PURE NICKEL

ISABELLENHÜTTE

Brand Name	PURE NICKEL
Material Code	2.4060
Abbreviation	Ni 99.6

Chemical Composition (mass components) in %
Average values of alloy components

Ni
≥ 99.6

Form of Delivery

PURE NICKEL is supplied in the form of round wires in the range 5.0 to 0.05 mm Ø in bare or enamelled condition, also with rayon or silk covering, and in the form of stranded wires.

Electrical Resistance in Annealed Condition

Temperature coefficient of electrical resistance between 0° C and 100° C 10^{-6}/K	Electrical resistivity in: μΩ x cm (first line) and Ω/CMF (second line) Reference Values 20 °C tolerance ±10 %	100 °C	200 °C	300 °C	400 °C	500 °C
+ 5300 to + 6400	8	12	18	25	32	36
	48	72	108	150	192	217

Physical Characteristics (Reference Values)

Density at 20 °C		Melting Point	Specific heat at 20 °C	Thermal conductivity[1] at 20 °C	Average linear thermal expansion coefficient between 20 °C and		Thermal EMF against copper at 20 °C
					100 °C	400 °C	
g/cm³	lb/cub in	°C	J/g K	W/m K	10^{-6}/K	10^{-6}/K	μV/K
8.9	0.32	1440	0.47	69	13	14	- 23

Strength Properties at 20 °C in Annealed Condition

Tensile Strength[2]		Elongation (L_0 = 100 mm) % at nominal diameter in mm				
MPa	psi	0.02 to 0.063	>0.063 to 0.125	> 0.125 to 0.5	> 0.5 to 1	> 1
450	65300	≈ 10	≈ 15	≈ 18	≥ 20	≥ 25

1) As with all pure metals, the thermal conductivity strongly depends on the purity and temperature.
2) This value applies to wires of 2 mm diameter. For thinner wires the minimum values will substantially increase, depending on the dimensions.

Properties and Application Notes

PURE NICKEL is especially characterized by very high resistance to oxidation and chemical corrosion. Its resistivity is even lower than the resistivity of NICKEL 99.2 while its temperature coefficient is higher. There is a large scale of possible applications. Wires of PURE NICKEL are mainly used for the manufacture of connections for heating elements as well as heating spirals in spark-plugs.
PURE NICKEL is magnetic up to approx. 350 °C.
The maximum working temperature in air is 700 °C.

General Note

PURE NICKEL is not a standard resistance alloy. Therefore no resistance values are quoted. The weight values correspond to those of ISOTAN® wires of the same diameter.

Notes on Treatment

PURE NICKEL can be worked easily. This alloy can be soldered and brazed without difficulty. All known welding methods can be used.

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