

Brand Name	ISA <sup>®</sup> -NICKEL <sup>1)</sup>			
Material Code	2.4360			
Abbreviation	NiCu30Fe			
Chemical Composition (mass components) in % Average values of alloy components				
Ni	Cu	Fe	Mn	
Rem.	31	1	1	

## Form of Delivery

ISA<sup>®</sup>-NICKEL is supplied in the form of round wires in the range 8.0 to 0.03 mm Ø and stranded wires in bare condition.

## Properties and Application Notes

ISA<sup>®</sup>-NICKEL is known for its high resistance to oxidation and chemical corrosion. These features govern the application: Wire cloth, connecting braids for heating elements, welding wires and many more applications. The maximum working temperature in air is 700 °C.

## Electrical Resistance in Annealed Condition

Temperature coefficient <sup>2)</sup> of electrical resistance between 20 °C and 105 °C 10 <sup>-6</sup> /K	Electrical resistivity <sup>2)</sup> in: μΩ x cm (first line) and Ω / CMF (second line) Reference Values					
	20 °C	100 °C	200 °C	300 °C	400 °C	500 °C
+ 400 to + 600	49	51	53	55	56	57
	295	307	319	331	337	343

## Physical Characteristics (Reference Values)

Density at 20 °C		Melting Point °C	Specific heat at 20 °C J/g K	Thermal conductivity at 20 °C W/m K	Average linear thermal expansion coefficient between 20 °C and		Thermal EMF against copper at 20 °C μV/K
g/cm <sup>3</sup>	lb/cub in				100 °C 10 <sup>-6</sup> /K	400 °C 10 <sup>-6</sup> /K	
8.9	0.32	1360	0.42	22	13.5	15	- 33

## Strength Properties at 20 °C in Annealed Condition

Tensile Strength <sup>3)</sup>		Elongation (L <sub>0</sub> = 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	65250	≈ 12	≈ 18	≈ 20	≥ 20	≥ 25

1) ISA<sup>®</sup>-NICKEL is a registered trademark of Isabellenhütte Heusler GmbH & Co. KG.

2) ISA<sup>®</sup>-NICKEL is not standardized as a resistance alloy.

3) This value applies to wires of 2 mm diameter. For thinner wires the minimum values will substantially increase, depending on the dimensions.

## General Note

Since ISA<sup>®</sup>-NICKEL alloy itself cannot be used as a resistance material, but merely for accessories for resistive components, no resistance values per meter are given. The weight values correspond to those of ISOTAN<sup>®</sup> wires of the same diameter.

## Notes on Treatment

ISA<sup>®</sup>-NICKEL can be worked easily. It can be soldered and brazed without difficulty. All known welding methods are applicable.