



Brand Name	ISA®-NICKEL 405			
Material Code	2.4363			
Abbreviation	NiCu30FeS			
Chemical Composition (mass components) in %.				
Average values of alloy components				
Ni	Cu	Fe	Mn	S
Rem.	31	2	2	0.04

Features and Application Notes

ISA®-NICKEL 405 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 material is easy to machine and is highly resistant to stress corrosion cracking.

Form of Delivery

ISA®-NICKEL 405 is supplied in the form of round wires in the range 0.03 to 8.00 mm Ø and stranded wires in bare condition.

Electrical Resistance in Annealed Condition

Temperature coefficient²⁾ of electrical resistance between

Electrical resistivity in: $\mu\Omega \times \text{cm}$ (first line) and Ω / CMF (second line)
Reference Values

+20 °C and +105 °C
10⁻⁶/K

+20 °C
tolerance $\pm 10\%$

+100 °C

+200 °C

+300 °C

+400 °C

+500 °C

+500 to +700

51.1

53.7

55.9

57.4

58.7

60.3

307

322

337

346

355

367

Physical Characteristics (Reference Values)

Density at +20 °C

Melting point

Specific heat
at +20 °C

Thermal conducti-
vity at +20 °C

Average linear thermal expansion coefficient
between +20 °C and

+100 °C

+400 °C

g/cm³

lb/cub in

°C

J/g K

W/m K

10⁻⁶/K

10⁻⁶/K

8.8

0.32

+1,300

0.38

22

14.2

16.1

Mechanical Properties at +20 °C in Annealed Condition

Tensile Strength³⁾

Elongation ($L_0 = 100 \text{ mm}$) % at
nominal diameter in mm

E-Module

MPa

psi

%

GPa

450

85,250

30

179

Notes on Treatment // ISA®-NICKEL 405 is easy to process.

Copper-nickel alloys can be soft and hard soldered as well as welded by the known processes.

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

2) ISA®-NICKEL is not standardized as a resistance alloy.

3) This value applies to wires of 2.0 mm diameter.