Nickel Overview:

Commercially pure or low-alloy nickel has characteristics that are useful in several fields, notably chemical processing and electronics. Nickel is highly resistant to various reducing chemicals and is unexcelled in resistance to caustic alkalies. Compared with nickel alloys, commercially pure nickel has high electrical and thermal conductivity. It also has a high Curie temperature and good magnetostrictive properties. Annealed nickel has a low hardness and good ductility and malleability. Those attributes, combined with good weldability, make the metal highly fabricable. Nickel has a relatively low work-hardening rate, but it can be cold worked to moderately high strength levels while maintaining ductility.

Nickel 200

Nickel 200 (UNS N02200/W.Nr. 2.4060 & 2.4066) is commercially pure (99.6%) wrought nickel. It has good mechanical properties and excellent resistance to many corrosive environments. Other useful features of the alloy are its magnetic and magnetostrictive properties, high thermal and electrical conductivities, low gas content and low vapor pressure.

The corrosion resistance of Nickel 200 makes it particularly useful for maintaining product purity in the handling of foods, synthetic fibers, and caustic alkalies; and also in structural applications where resistance to corrosion is a prime consideration. Other applications include chemical shipping drums, electrical and electronic parts, aerospace and missile components.

Nickel 201

Nickel 201 (UNS N02201/W.Nr. 2.4061 and 2.4068) is the low-carbon version of Nickel 200. Typical applications are caustic evaporators, combustion boats, plater bars, and electronic components. Nickel 201, because of its low base hardness and lower work-hardening rate, is particularly suited for spinning and cold forming. It is preferred to Nickel 200 for applications involving exposure to temperatures above 600°F (315°C). Due to its low carbon content, Nickel 201 is resistant to graphitization so it can be used at temperatures above 600°F. Nickel 201 is approved for construction of pressure vessels and components under ASME Boiler and Pressure Vessel Code Section VIII, Division 1. Nickel 201 is approved for service up to 1250°F.

Nickel 201 has the excellent corrosion resistance characteristic of Nickel 200. Because it is a low-carbon material (0.02% max.), alloy 201 is not subject to embrittlement by intergranularly precipitated carbon or graphite when held at temperatures of 600° to 1400°F (315° to 760°C) for extended times, provided carbonaceous materials are not in contact with it. It is, therefore, preferred to Nickel 200 in all cases where temperatures exceed 600°F (315°C). Nickel 201 is used for laboratory crucibles that must be capable of withstanding oxidizing furnace atmospheres up to 2000°F (1100°C). The material is subject to intergranular embrittlement by sulfur compounds at temperatures above 600°F (315°C).

Physical Data :

Density (lb / cu. in.)	0.321
Specific Gravity	8.89
Specific Heat (Btu/lb/Deg F - [32-212 Deg F])	0.109
Electrical Resistivity (microhm-cm (at 68 Deg F))	76
Melting Point (Deg F)	2625
Poissons Ratio	0.29
Thermal Conductivity	463
Mean Coeff Thermal Expansion	7.4
Modulus of Elasticity Tension	29.7

Mechanical Data:

Form	Plate
Condition	Hot Rolled
Temperature	70
Tensile Strength	77
Yield Strength	50
Elongation	45
Rockwell	B67

Form	Plate
Condition	Hot Rolled Annealed
Temperature	70
Tensile Strength	67
Yield Strength	52
Elongation	50
Rockwell	B60

Form	Sheet
Condition	Test Specimen Annealed
Temperature	70
Tensile Strength	65
Yield Strength	22
Elongation	47

Form	Strip
Condition	Annealed
Temperature	70
Tensile Strength	65
Yield Strength	22
Elongation	47

Form	Strip
Condition	Spring Temper
Temperature	70
Tensile Strength	110
Yield Strength	93
Elongation	8

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Contact us for manufacturers' complete material property datasheets.