

	EN	UNS (ASTM)	AISI	LMSA
<b>Désignation</b>	<b>Ni200</b>	2.4068	N02200	-
	<b>Ni201 / Ni200</b>	2.4066 / 2.4060	N02201 / N02200	-

## Chemical composition

	Ni	C	Si	Mn	S	Cu	Fe
Ni 201	99.6 min.	≤ 0.02	≤ 0.15	≤ 0.35	≤ 0.005	≤ 0.15	≤ 0.25
Ni 200	99.0 min.	≤ 0.15	≤ 0.35	≤ 0.35	≤ 0.010	≤ 0.25	≤ 0.40

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

## Main technical properties and features

Nickel 200 and 201 are the two most commercially used pure nickel grades. These grades have a face-centered cubic structure from absolute zero to melting temperature. Nickel 201 is the low carbon version. Nickel 200 and 201 are characterized by high ductility over a wide temperature range, high thermal and electrical conductivity, good magnetostriction and excellent corrosion resistance, especially to hydrofluoric acid and alkaline solutions.

The use of Nickel 200 is limited to temperatures below 315 °C, due to its high carbon content. For temperatures above 315 °C, Nickel 200 can undergo graphitization, which can compromise its properties (loss of ductility, corrosion resistance etc.). For operating temperatures above 315 °C, the use of Nickel 201 is preferred. Thanks to its lower carbon content compared to Nickel-200, Nickel 201 has better intergranular corrosion resistance for temperatures above 315°C. In addition, Nickel 201 can be used in environments containing anhydrous chlorine gas and hydrogen chloride at temperatures up to 550 °C. Nickel 200 and 201 can be annealed in a wide temperature range (700 - 925 °C) below the recrystallization temperature. For high work-hardening rates a stress relieving treatment can be carried out between 550 - 650 °C without causing grain recrystallization, while maintaining high mechanical properties. Both grades are suitable for welding and brazing.

The Lamineries MATTHEY delivers cold rolled precision semi-finished products (sheets and strips) in Nickel 200 and 201. The strips delivered in Nickel 201 (2.4066) comply with the technical specifications for Nickel 200 (2.4066 and 2.4068) strips.

## Typical uses

Electronic and electrical components, battery connections/terminals, aeronautical components, heat exchangers, chemical industry.

## Typical manufacturing range

	Thickness (mm)	Width (mm)	Length (mm)
<b>Rolled products</b> Strip in coils <sup>[1]</sup>	0.010 - 2.000	1.5 - 200.0	-
Strip as sheets <sup>[1]</sup>	0.010 - 1.500	10.0 - 200.0	100 - 3000

<sup>[1]</sup> Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some combinations of thicknesses and widths are not possible.

## Mechanical properties of strips

Temper	R <sub>m</sub> (N/mm <sup>2</sup> )	R <sub>p0.2</sub> (N/mm <sup>2</sup> )	A <sub>50mm</sub> (%)	Hardness HV
annealed	340 - 500	100 - 300	20 - 50	70 - 120
½ hard	450 - 650	250 - 550	5 min.	135 - 210
hard	650 min.	-	-	190 min.

## Physical properties

Modulus of elasticity	kN/mm <sup>2</sup>	207
Poisson ratio		0.31
Density	g/cm <sup>3</sup>	8.89
Melting point	°C	1435 - 1445
Linear dilatation coefficient (20 - 100°C)	10 <sup>-6</sup> /°C	13.3
Thermal conductivity at 20°C	W/m °K	79 (Ni 201), 79 (Ni201) <sup>[1]</sup>
Specific heat at 20°C	J/(kg. K)	456
Curie temperature	°C	360
Electrical resistivity at 20°C	μΩcm	9.5
Electrical conductivity at 20°C	% IACS	19.2
Magnetostriction coefficient at saturation	Δl/l 10 <sup>-6</sup> .	30
Magnetic properties		Ferromagnetic

<sup>[1]</sup> The thermal conductivity and electrical conductivity is the highest for the high purity version.

## Tolerances (strip and foil)

Thickness	Thickness (mm)		Lamineries MATTHEY		
	≥	<	LMSA Standard	LMSA Precision	LMSA Extreme
		0.025	-	-	± 0.001
	0.025	0.050	± 0.003	± 0.002	± 0.0015
	0.050	0.065	± 0.004	± 0.003	± 0.002
	0.065	0.100	± 0.006	± 0.004	± 0.003
	0.100	0.125	± 0.008	± 0.006	± 0.003
	0.125	0.150	± 0.008	± 0.006	± 0.004
	0.150	0.250	± 0.010	± 0.008	± 0.004
	0.250	0.300	± 0.012	± 0.008	± 0.005
	0.300	0.400	± 0.012	± 0.009	± 0.005
	0.400	0.500	± 0.015	± 0.010	± 0.006
	0.500	0.600	± 0.020	± 0.012	± 0.007
	0.600	0.800	± 0.020	± 0.014	± 0.007
	0.800	1.000	± 0.025	± 0.015	± 0.009
	1.000	1.200	± 0.025	± 0.018	± 0.012
	1.200	1.250	± 0.030	± 0.020	± 0.012
	1.250	1.500	± 0.035	± 0.025	± 0.014

The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.

Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.

### Width

Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.

Camber	Width (mm)		Camber max. (mm/m)			
	>	≤	LMSA standard		LMSA extreme	
			≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
Our tolerance "LMSA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm). Other tolerances upon request.	3	6	12	-	6	-
	6	10	8	10	4	5
	10	20	4	6	2	3
	20	250	2	3	1	1.5

### Surface

Special surface qualities upon request

### Flatness

Special requirement on the longitudinal or transversal flatness upon request

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