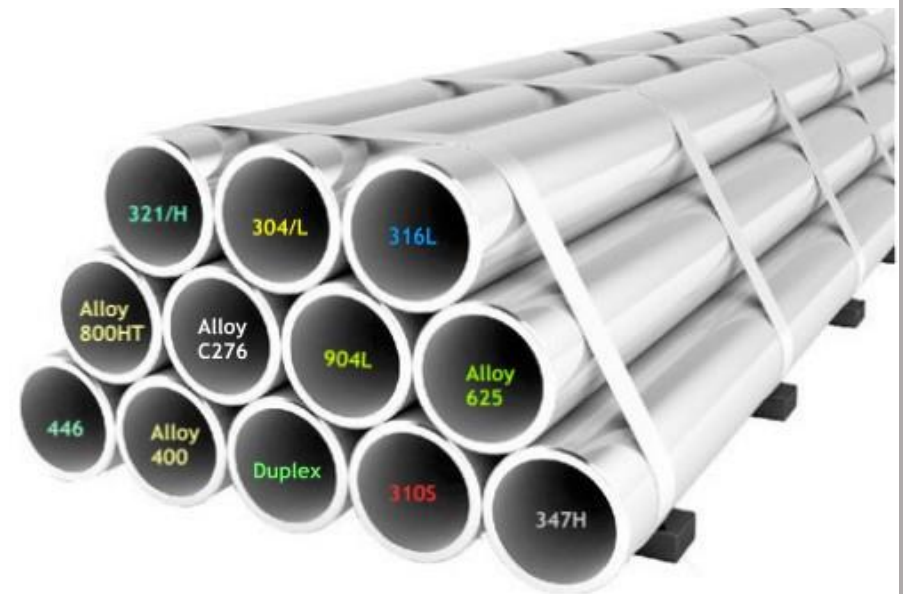


## NICKEL 200/201

### Datasheet for Nickel 200/201

- Pipes & Tubes
- Sheets & Plates
- Bars & Rods, Forgings
- Fittings & Flanges
- Nuts & Bolts
- Valves



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# Datasheet for Nickel 200/201

## UNS N02200, W.Nr. 2.4060 & 2.4066

### What is Nickel 200/201?

- Nickel 200 (UNS N02200 & W.Nr. 2.4060 & 2.4066) is solid solution strengthened and commercially pure wrought nickel. It has good mechanical properties and excellent resistance to many corrosive environments. Nickel 200 is primarily used in food processing and pharmaceutical industry due to its corrosion resistance and high nickel purity. It can also be used in applications involving reducing chemicals, caustic alkalies, distilled and natural waters, alkaline salt solutions, dry fluorine, and synthetic fibers.
- Nickel 201 (UNS N02201 or W.Nr. 2.4061 & 2.4068) is has almost identical chemical composition as Nickel 200 except the lower-carbon content. Nickel 201 is typically applied in caustic evaporators, combustion boats, plater bars, as well as electronic components. Compared to Nickel 200, Nickel 201 has much lower base hardness and lower work-hardening rate hence is particularly suited for spinning and cold forming. According to ASME Boiler and Pressure Vessel Code Section VIII-Division 1, Nickel 201 is approved for construction of pressure vessels for service up to 1250°F. Its mechanical properties also vary depending on the manufacture process and heat treatment conditions.

### Nickel 200/201 Product Specification

Product	Nickel 200/201
Equivalents	Alloy 201, UNS N02201, 2.4068   Alloy 200, UNS N02200, 2.4066
Items	Pipe, Tubes, Tubing, Fittings, Flanges, Valves, Fasteners, Sheet, Square Bar, Threaded Bar, Plate, Hexagon Bar, Fasteners and Fixings, Round Bar, Flat Bar, Rebar, Angle, Tube & Pipe, Wire
Size	1/4" - 60"
Pipe Type	Seamless, Welded, ERW, Fabricated, Custom Size Pipes
Specifications	ASTM, ASME, DIN, GOST, JIS
Certification	EN 10204 3.1
Fittings Type	Butt Weld, Screwed & Socket Weld, Flanges, Instrumentation
Other Fittings	Elbows, Tees, Reducers, Caps, Stub Ends, Flanges (ANSI, Table E, D and H), Nuts, Bolts, Screws, Threaded Bars

## Chemical Composition, Mechanical & Physical Properties of Nickel Alloy 200/201

### Chemical Composition of Nickel 200/201

Element	Nickel 200	Nickel 201
Nickel (plus Cobalt)	99.0 minimum	99.0 minimum
Copper	0.25	0.25
Iron	0.4	0.4
Manganese	0.35	0.35
Carbon	0.15	0.02
Silicon	0.35	0.35
Sulfur	0.01	0.01

- Weight % (all values are maximum unless a range is otherwise indicated)

### Mechanical Properties of Nickel 200/201

	Yield Strength 0.2% Offset		Ultimate Tensile Strength		Elongation in 2 inches	Hardness	
	ksi	MPa	ksi	MPa		Brinell (3000-kg)	Rockwell B
Nickel 200	15–40	105–275	55–80	380–550	60–40	90–140	45–73
Nickel 201	12–35	83–240	50–70	345–485	60–40	—	—

### Physical Properties of Nickel 200/201

Density:	8.885 g/cm <sup>3</sup>
Young's modulus at 25.6°C:	2.05 x10 <sup>5</sup> Mpa
Melting range:	1435-1446°C
Specific heat at 25.6°C:	456.4 J/(kg*K)
Thermal conductivity at 25.6°C:	724.7 kcal/(hr.m.°C)
Electrical Resistivity at 25.6 °C:	9.6 x10 <sup>-8</sup> Ωm

### Nickel 200/201 Products & Manufacturing Standards

Products Form	Standard
Alloy 200/201 Rod and bar	ASTM B160, DIN 17752, ISO9723
Alloy 200/201 Pipe and Tube	ASTM B161, B163, B725, B730, B751, B775, B829, DIN 17751, ISO 6207
Alloy 200/201 Plate, Sheet & Strip	ASTM B162, DIN 17750, ISO 6208
Alloy 200/201 Buttweld Fittings	ASTM B366
Alloy 200/201 Forgings (Flange, Fittings and Forgings)	ASTM B564, ISO 9725, DIN 17754
Alloy 200/201 Wire	DIN 17753, ISO 9724

## Types of Nickel Alloys

ASTM/AISI	UNS No	EN	DIN	JIS
Incoloy 800	N08800	1.4558	X2NiCrAlTi3220	NCF2B
Incoloy 800H	N08810			
Incoloy 825	N08825	2.4858	NiCr21Mo	NCF825
Inconel 600	N06600	2.4816	LC-NiCr12Fe	NCF1B
Hastelloy B	N10001			N12MV
Hastelloy B2	N10665	2.4617	NiMo28	
Hastelloy C				
Hastelloy C276	N10276	2.4819	NiMo16Cr15W	NW 0276
Hastelloy C4	N06455	2.461		
Hastelloy C22	N06022	2.4602		
Inconel 625	N06625	2.4856	NiCr22Mo9Nb	
Inconel 718	N07718	2.4668		
Monel 400	N04400	2.436		NW 4400
Nickel 200	N02200	2.406		

- Trademark Notice:** Some names are trade names and/or trademarks of specific manufacturers. We are not affiliated with any manufacturer(s). Orders will be filled to meet specifications from any available source(s). Names are listed solely for reference to help identify products consistent with listed specifications.

## What are the Properties of Nickel 200/201?

Nickel 200 and 201 General Guideline for Corrosion Resistance			
Sulfuric Acid	Good	Organic Acids	Excellent
Phosphoric Acid	Good	Strong Alkalis	Excellent
Hydrochloric Acid	Good	Reducing Salts	Excellent
Hydrofluoric Acid	Excellent	Oxidizing Salts	Not recommended
Nitric Acid	Not Recommended	Seawater	Good

- **Heat-Resistant Applications.** Nickel-base alloys are used in many applications where they are subjected to harsh environments at high temperatures. Nickel-chromium alloys or alloys that contain more than about 15% Cr are used to provide both oxidation and carburization resistance at temperatures exceeding 760°C. Nickel 200 is normally limited to service at temperatures below 600°F (315°C), since at higher temperatures it can suffer from graphitization which can severely compromise properties. At higher temperatures Nickel 201 should be utilized. Both grades are approved under ASME Boiler and Pressure Vessel Code Section VIII, Division 1. **Nickel 200 is approved for service up to 600°F (315°C), while Nickel 201 plate is approved up to 1250°F (677°C).**
- **Corrosion Resistance:** - Nickel-base alloys offer excellent corrosion resistance to a wide range of corrosive media. However, as with all types of corrosion, many factors influence the rate of attack. The corrosive media itself is the most important factor governing corrosion of a particular metal.
- Nickel 200 (UNS N02200) and 201 (UNS N02201) are dual-certifiable wrought nickel materials. They differ only in the maximum carbon levels present—0.15% for Nickel 200 and 0.02% for Nickel 201.
- Nickel 200 and 201 are ferromagnetic and exhibit highly ductile mechanical properties across a wide temperature range. Both grades are easily welded and processed by standard shop fabrication practices.
- Alloy 200/201 is extremely resistance to caustic alkalis up to and including the molten state. The extra-low carbon content of Alloy 200/201 gives virtual immunity to intergranular attack above about 315°C. The presence of chlorates must be kept to a minimum, as they accelerate the rate of attack.
- Commercially pure wrought Nickel with good mechanical properties over a wide range of temperature and excellent resistance to many corrosives, in particular hydroxides.
- Good resistance to corrosion in acids and alkalis and is most useful under reducing conditions. In acid, alkaline and neutral salt solutions the material shows good resistance, but in oxidizing salt solutions severe attack will occur.
- Resistant to all dry gases at room temperature and in dry chlorine and hydrogen chloride may be used in temperatures up to 550C.
- Resistance to mineral acids varies according to temperature and concentration and whether the solution is aerated or not.
- Corrosion resistance is better in de-aerated acid.

## What are the Applications of Nickel 200/201 Alloy?

Nickel 200/201 is used in viscose rayon and polymer production, food processing, reactors, tubes, aerospace engineering, military and other applications.

- Chemical processing and storage
- Food processing equipment
- Salt production
- Caustic handling equipment
- Synthetic fiber production
- Manufacturing equipment, reactors and vessels where sodium hydroxide and fluorine is used
- Aerospace and defense

## Manufacturing Nickel 200/201 Products

<a href="#">Nickel 200/201 Sheet</a>	<a href="#">Nickel 200/201 Plate Cuttings/Profiles</a>	<a href="#">Nickel 200/201 Nuts, Bolts and Fasteners</a>
<a href="#">Nickel 200/201 Plate</a>	<a href="#">Nickel 200/201 Foil, Coil</a>	<a href="#">Nickel 200/201 Wire</a>
<a href="#">Nickel 200/201 Blocks/Slabs</a>	<a href="#">Nickel 200/201 Strip</a>	<a href="#">Nickel 200/201 Ingot</a>
<a href="#">Nickel 200/201 Rod/Bar</a>	<a href="#">Nickel 200/201 Pipes and Tubes</a>	<a href="#">Nickel 200/201 Forgings and Castings</a>
<a href="#">Nickel 200, 201 Flanges</a>	<a href="#">Nickel 200/201 Forged Fittings</a>	<a href="#">Nickel 200/201 Buttweld Fittings</a>

## About Metallica Metals – The Steel Pipes Factory

- Established in 1975, the Metallica Metals Group (The Steel Pipes Factory) has its operations spread across major cities in India. We are a pioneer in the stainless steel pipes, nickel alloy products, titanium products, carbon steel pipes and alloy steel pipes manufacturing and processing industry. Our products including pipe fittings, flanges, pipes, sheet plates and valves are exported to over 70 countries across the world, while in India we have supplied to even the remote areas. With over 250 tons of sale in stainless steel and carbon steel pipes every day, Metallica has emerged as a prominent vendor for many buyers in India and Overseas
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## Our Key Products

### **STAINLESS STEEL & NICKEL ALLOYS**

Pure Nickel Alloys

Monel Alloys (Ni-Cu Alloys)

Inconel (Ni-Cr-Mo) Alloys

Incoloy Alloys (Ni-Cr-Fe)

Hastelloy Alloys

Stainless Steel 304/304L

Stainless Steel 309S/309H

Stainless Steel 310/310S

Stainless Steel 316/316L

Stainless Steel 316Ti

Stainless Steel 317/317L

Stainless Steel 321/321H

Stainless Steel 347/347H

Stainless Steel 904L

Duplex Steels (UNS S32205, UNS S31803)

Super Duplex Steels (UNS S32760 / UNS  
S32750)

Stainless Steel 254 SMO (UNS S31254 / 1.4547)

### **INSTRUMENTATION TUBES & FITTINGS**

Instrumentation Tube

Hydraulic Tubing

Seamless Tubing

Instrumentation Tube Fittings

Double Compression Tube Fittings

Precision Pipe Fittings

Needle & Gauge Valves

Manifold Valves

### **PRODUCTS**

Steel Sheet & Plate

Steel Coil & Strip

Steel Pipes

Steel Tubes

Electropolish Tube

Heat Exchanger Tubes

Steel Bars/Rods & Wire

Fasteners (Nut, Bolt, Washer)

Steel Angle Bars

Hex Steel Bars

Round Steel Bars & Rod

Flat Steel Bars

Forgings, Rings & Forged Blocks

Stainless Steel Pipe

Stainless Steel Seamless Pipe

Stainless Steel Welded Pipe

Stainless Steel Tubes

Stainless Steel Furnace Tubes

Stainless Steel Seamless Tubing

Stainless Steel Heat Exchanger Tubes

Large Diameter Pipe

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